NOTE

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Cover 1, p. 3,

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Chilton's
NOVEMBER 12, 1980
IRON AGE
THE MAGAZINE FOR METALWORKING MANAGEMENT

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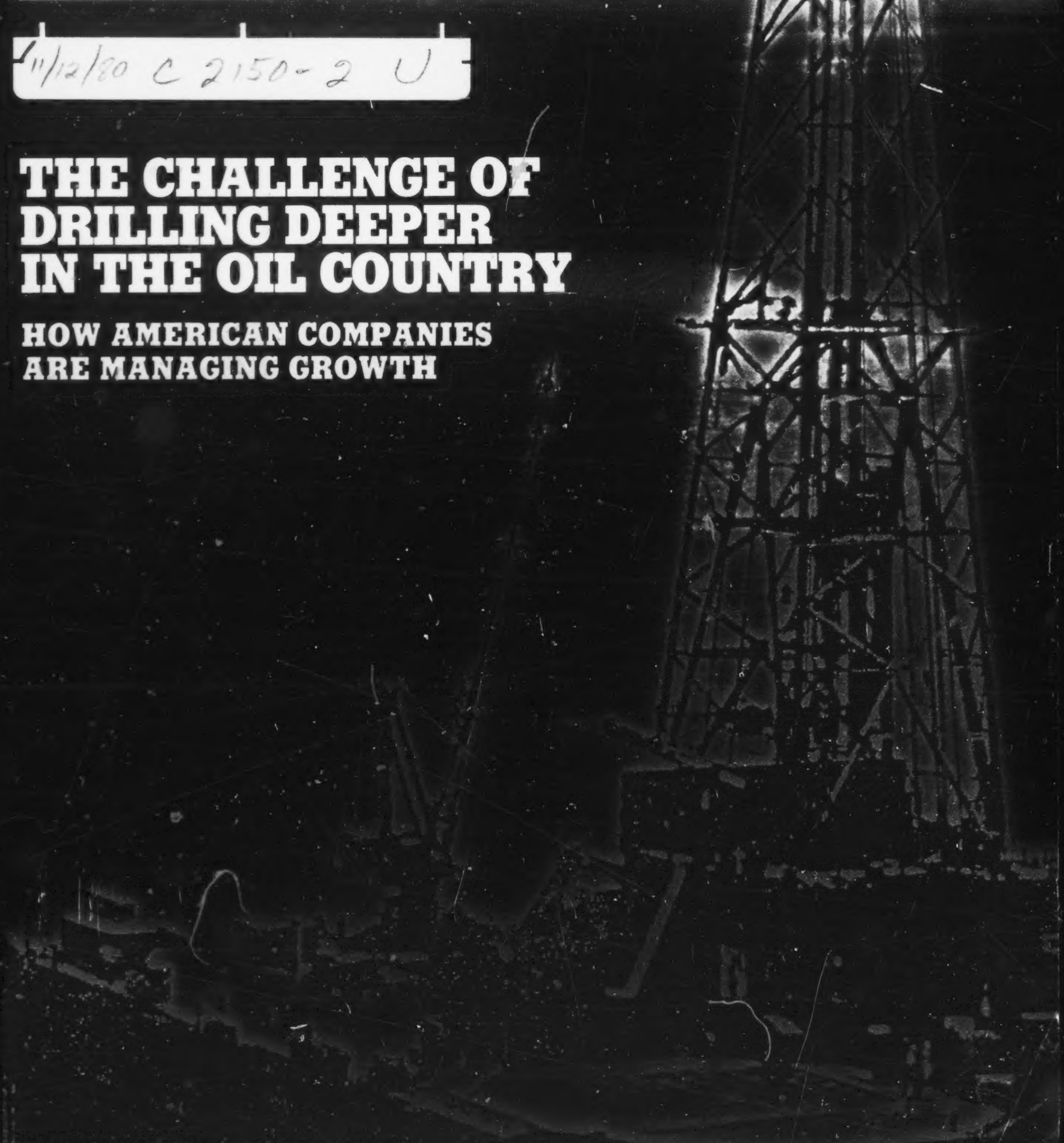
THE CHALLENGE OF DRILLING DEEPER IN THE OIL COUNTRY

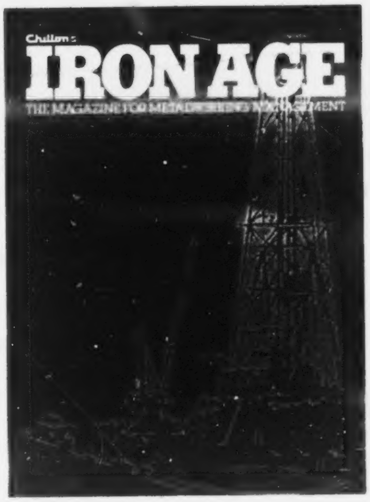
HOW AMERICAN COMPANIES ARE MANAGING GROWTH



IRON AGE

VOL. 223, NO. 41

NOVEMBER 12, 1980



COVER STORY

52 Oil country tubulars take on the sour gas environments
Contrary to what we have been led to believe, there is plenty of oil and gas under the crust of America. The problem is that the deposits are way down there where the environment is very hostile or sour. As a result, only high grade tubulars can be used to pump the hydrocarbons up to the surface. It's a big challenge for the metallurgist.

FEATURES

28 Are environmentalists choking nation's minerals industry?
There's growing concern excessive environmental regulations, muddled by government agencies, will leave U.S. artificially minerals poor.

33 Hazardous waste rules are effective Nov. 19.
That is the date, the EPA says, that industry must begin to document the means it has used to dispose of its dangerous wastes.

37 Metal building industry digs in for recovery
After being hard hit by the recession, metal building producers look for over $1 billion in sales this year.

44 Continued growth isn't accidental—it's managed
In metalworking, there's a decade of sustained growth at Cameron Iron and Trinity Industries. And there are good reasons why.

61 Oil country goods 'doubtful' boom to domestic mills
Hot drilling pace means U.S. producers must expand capacity or lose orders to foreign mills.

NEWSFRONTS

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As the prime rate has eased, the rate of merger activity has increased and a gradual recovery is indicated.

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Westinghouse's new productivity center near Pittsburgh will speed the transfer of technology throughout the company's system.

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Steel price increases could turn the steel recovery into a boom, but auto sales will be the deciding factor.

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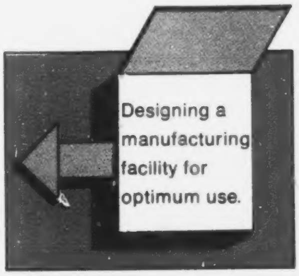

IRON AGE (ISSN 0021-1508) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	242	226	207	282
Buffalo	43	42	41	71
Pittsburgh	379	362	296	419
Youngstown	108	100	78	153
Cleveland	113	120	124	157
Detroit	166	179	122	195
Chicago	584	595	417	581
Cincinnati	90	91	70	100
St. Louis	72	70	71	86
Southern	224	226	202	243
Western	125	132	129	167
U.S. Production	2,146	2,143	1,757	2,454

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective October 27, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,146	2,143	88,874	113,787
Capability Utilization Rate	72.7	72.6	70.8	89.2
Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 10/5/80)	22.019	22.019	21.736	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 97.17	$ 95.50	$ 94.17	$ 86.83
No. 2 bundles	$ 72.17	$ 70.50	$ 67.17	$ 56.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$102.50	$103.50	$ 87.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	86.50
No. 1 steel, Chicago	97.50	92.50	87.50	86.50
No. 1 bundles, Detroit	93.50	93.50	93.50	92.50
Low Phos., Youngstown	105.50	105.50	100.50	97.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	124.50	121.50	119.50	145.50

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* **Finished Steel Composite**
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** **Pig Iron Composite**
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** **Steel Scrap Composite**
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective October 27, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	98.50-102.00	98.75-100.00	10/24/80
Lead	45.00	42.00-45.00	10/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	37.75-39.50	37.50-39.50	10/14/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$633.00
Indium, 99.9%, per troy oz	$14.50-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$407-$415
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$225
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$19.00
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Oct. 20—Holiday
Oct. 21—736.88
Oct. 22—746.61
Oct. 23—736.02
Oct. 24—733.36

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	94	84¾
Yellow brass	76¾	71⅝
Red brass	84⅞	78⅜
Comm. bronze	87⅝	80½
Mang. bronze	74⅞	73⅛
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	86
No. 2 copper wire	74
Light copper	65

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	82	
No. 2 copper wire	70	
Light copper	61	
No. 1 composition	73	
No. 1 comp. turnings	72	
Hvy. yellow brass solids	42	
Hvy. yellow brass turnings	33	
Radiators	54	
Aluminum		
New mixed clips	42	—43
Old sheet	39	—40
Old cast	39	—40
Clean dry borings	41	—42

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	48	—49
Mixed L.C. clips	38	—39
Old sheets and cast	31	—32
Boring and turnings	26	—27
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	74	—75
No. 2 copper wire	64	—65
Light copper	58	—59
Radiators	47	—48
No. 1 composition	62	—63
No. 1 composition turn'gs	59	—60
Cocks and faucets	45	—46
Clean heavy yellow brass	38	—39
Brass pipe	44	—45
New soft brass clippings	53	—54
Yellow brass rod ends	45	—46
Lead		
Heavy soft lead	21	—22
Whole batteries	10	—11
Type metal	22	—23
Electrotype	30	—31
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

MATERIALS NEWSFRONT

(Effective October 27, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 1 dealer bundles	113.00 to	114.00
No. 1 factory bundles (auto)	111.00 to	112.00
No. 2 bundles	66.00 to	67.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	119.00 to	120.00
Heavy turnings	94.00 to	95.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	125.00 to	126.00
Scrap rails, random lgth.	115.00 to	116.00
RR specialties	116.00 to	117.00
No. 1 machinery cast	106.00 to	107.00
Cupola cast	99.00 to	100.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	690.00 to	700.00
18-8 turnings	590.00 to	600.00

Chicago

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	91.00 to	92.00
No. 1 dealer bundles	108.00 to	109.00
No. 1 factory bundles (auto)	116.00 to	117.00
No. 2 dealer bundles	85.00 to	86.00
No. 1 busheling	107.00 to	108.00
Shredder scrap	109.00 to	110.00
Machine shop turn.	45.00 to	46.00
Mixed bor. and turn.	46.00 to	47.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	70.00 to	71.00
Low phos. forge crop	121.00 to	122.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to	128.00
Low phos. 2 ft. and under	123.00 to	124.00
No.1 RR hvy. melting	100.00 to	101.00
Scrap rails, random lgth.	110.00 to	111.00
Reroller rails	126.00 to	127.00
Rails, 2 ft. and under	134.00 to	135.00
RR couplers and knuckles	121.00 to	122.00
RR car axles	151.00 to	152.00
No. 1 machinery cast	124.00 to	125.00
Cupola cast	115.00 to	116.00
Stove plate	107.00 to	108.00
Steel car wheels	116.00 to	117.00
Stainless		
18-8 bundles and solids	630.00 to	640.00
18-8 turnings	510.00 to	520.00
430 bundles and solids	130.00 to	135.00
430 turnings	60.00 to	65.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to	$ 93.00
No. 2 hvy. melting	80.00 to	83.00
No. 1 dealer bundles	107.00 to	110.00
No. 2 dealer bundles	63.00 to	66.00
No. 1 busheling	107.00 to	110.00
Shredder scrap	105.00 to	108.00
Machine shop turn.	37.00 to	40.00
Mixed bor. and turn.	37.00 to	40.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	64.00 to	67.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	117.00 to	120.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	120.00 to	123.00
Cupola cast	98.00 to	101.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 83.00 to	$ 84.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	49.00 to	50.00
No. 1 busheling	90.00 to	91.00
Drop forge flashings	79.00 to	80.00
Machine shop turn.	53.00 to	54.00
Mixed borings and turn.	37.00 to	38.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	68.00 to	69.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	109.00 to	110.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	70.00 to	71.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	32.00 to	33.00
Low phos. plate	105.00 to	106.00
Electric furnace bundles	105.00 to	106.00
Galvanized bundles	95.00 to	96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	129.00 to	130.00
Low phos. punchings plate	129.00 to	130.00
Drop forge flashings	60.00 to	61.00
Foundry steel, 2 ft. & under	94.00 to	95.00
No. 1 RR hvy. melting	109.00 to	110.00
Rails, 2 ft. and under	134.00 to	135.00
Rails, 18 in. and under	135.00 to	136.00
Steel axle turnings	76.00 to	77.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	100.00 to	101.00
Stove plate	75.00 to	76.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	500.00 to	510.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to	$ 70.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 busheling	76.00 to	77.00
No. 1 dealer bundles	74.00 to	75.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 90.00 to	$ 91.00
No. 2 hvy. melting	77.00 to	78.00
Foundry steel, 2 ft.	77.00 to	78.00
No. 1 dealer bundles	90.00 to	91.00
No. 2 bundles	72.00 to	73.00
Machine shop turn.	20.00 to	21.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	90.00 to	91.00
Rails, random length	80.00 to	81.00
Rails, 18 in. and under	95.00 to	96.00
RR specialties	80.00 to	81.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	97.00 to	98.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 96.00 to	$ 97.00
No. 2 heavy melting	89.00 to	90.00
No. 1 dealer bundles	97.00 to	98.00
No. 2 bundles	73.00 to	74.00
No. 1 busheling	94.00 to	95.00
Shredder scrap	105.00 to	106.00
Machine shop turn.	31.00 to	32.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	96.00 to	97.00
Elec. furnace, 3 ft. & under	86.00 to	87.00
Structural and plate, 2 ft.	114.00 to	115.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	96.00 to	97.00
Scrap rails, random lgth.	103.00 to	104.00
Rails, 18 in. and under	121.00 to	122.00
Angles and splice bars	104.00 to	105.00
No. 1 cupola cast	104.00 to	105.00
Unstripped motor blocks	82.00 to	83.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	58.00 to	59.00
No. 1 dealer bundles	87.00 to	88.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	25.00 to	26.00
Low phos. 18 in. and under	110.00 to	111.00
Rails, random length	115.00 to	116.00
Rails, 2 ft. and under	122.00 to	123.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	35.00 to	36.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 59.00 to	$ 60.00
No. 2 hvy. melting	53.00 to	54.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	630.00 to	650.00
18-8 turnings	530.00 to	550.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	63.00 to	65.00
No. 1 dealer bundles	78.00 to	80.00
No. 2 bundles	42.00 to	44.00
No. 1 busheling	80.00 to	82.00
Shredder scrap	84.00 to	86.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	26.00 to	28.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	72.00 to	74.00
Heavy breakable cast	15.00 to	17.00

San Francisco

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	80.00 to	82.00
No. 1 dealer bundles	75.00 to	77.00
No. 2 dealer bundles	60.00 to	62.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	104.00 to	106.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to	$ 90.00
No. 2 hvy. melting	78.00 to	80.00
No. 1 dealer bundles	74.00 to	76.00
No. 2 dealer bundles	58.00 to	60.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	118.00 to	120.00
No. 1 cupola cast	109.00 to	111.00

Seattle

No. 1 hvy. melting	$ 98.00 to	$100.00
No. 2 hvy. melting	87.00 to	89.00
No. 2 bundles	74.00 to	76.00
No. 1 cupola cast	105.00 to	107.00
Mixed yard cast	95.00 to	97.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 78.00
No. 2 heavy melting cut 2 ft. and under	66.00
No. 1 dealer bundles	78.00
No. 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd	75.00
Bush. new fact. unprep'd	64.00
Machine shop turn.	25.00
Short steel turn.	25.00
Mixed bor. and turn.	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 97.00 to	$ 98.00
No. 2 hvy. melting	90.00 to	91.00
No. 2 bundles	53.00 to	54.00
Machine shop turn.	14.00 to	15.00
Crushed turnings	50.00 to	51.00
Shredder scrap	97.00 to	98.00
Cut structural plate 2 ft. and under	123.00 to	124.00
Unstripped motor blocks	86.00 to	87.00
Cupola cast	101.00 to	102.00

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ONLY THE FOLLOWING PAGES OF THIS PUBLICATION

HAVE BEEN FILMED

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1980

MACHINE TOOL TASK FORCE REPORT
PART ONE OF A TWO-PART SERIES

Chilton's
NOVEMBER 24, 1980

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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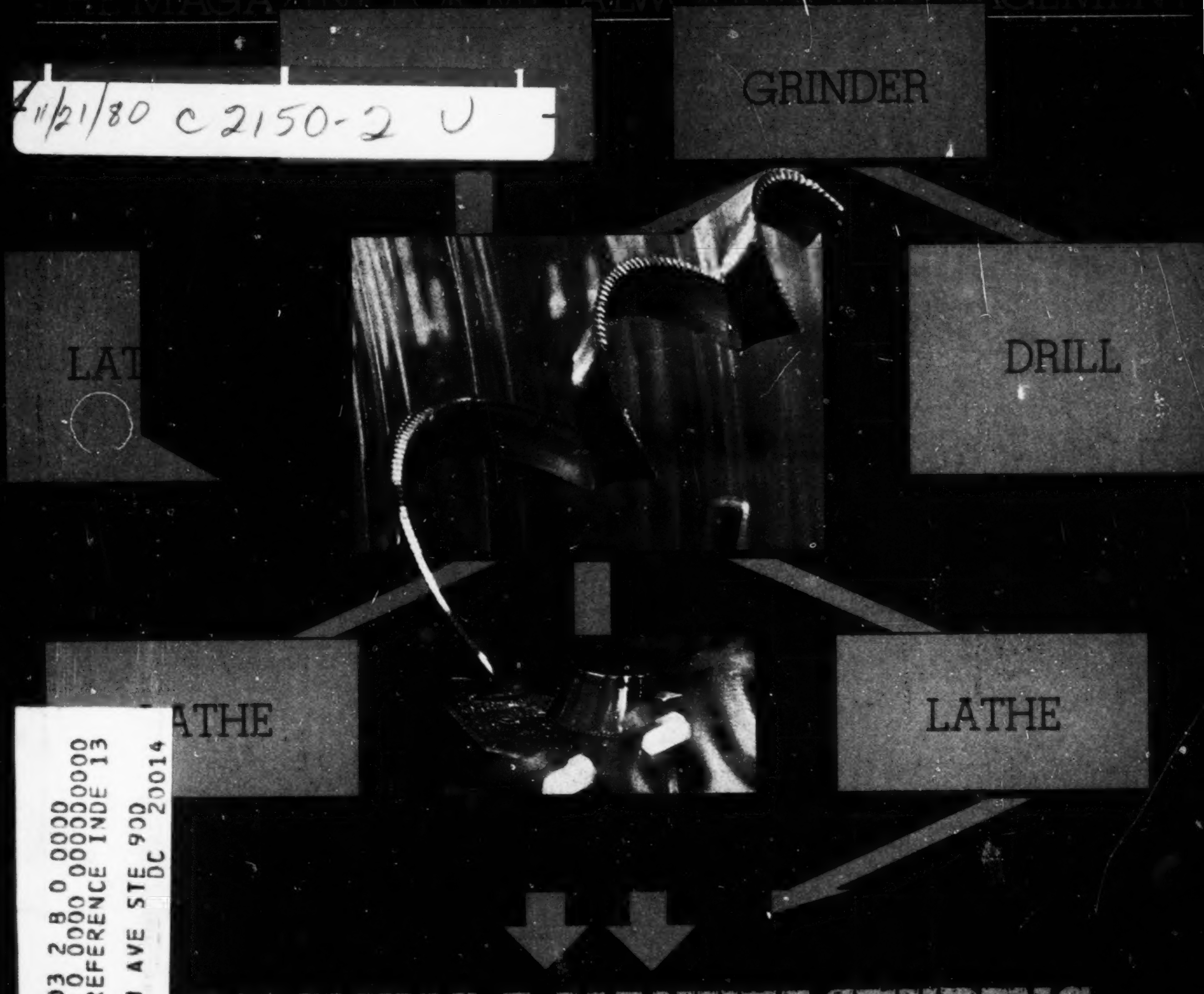

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DESIGNING A MANUFACTURING FACILITY FOR OPTIMUM USE

STEMS APPROACH TAKES HOLD IN METALFORMING

ETALWORKING'S MANUFACTURING SYSTEMS SERIES: 11
DIRECT NUMERICAL CONTROL — A BRIGHT FUTURE AHEAD

BETTER SENSORS, BETTER COMMUNICATIONS, BETTER PROCESS CONTROL

VOL. 223, NO. 42

IRON AGE

NOVEMBER 24, 1980

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

SALES DROUGHT IN SUMMER HURT STEEL, NONFERROUS

Thanks to the recession, the July-September span was a poor one for steelmakers. Aluminum producers did better. Strikes hurt copper.

By George J. McManus and Robert J. Regan

The third quarter was about as bad as expected for steel mills. Of the seven largest companies, all but Armco Inc. lost money on their steel operations.

Financial reports would have been even worse had it not been for nonsteel earnings and returns from property sales.

United States Steel Corp. derived $77.8 million from the sale of Universal Atlas Cement and from a real estate transaction. Wheeling-Pittsburgh Steel Corp. received $24.5 million from the sublease of steam coal reserves.

All the nagging problems of the steel industry came to a head in the summer quarter. There were climbing costs, declining prices and low volume.

Bad as it was, this concentrated dose may have purged the industry of its troubles. By the end of the quarter, the government's position on steel imports had been resolved. Steel companies had been promised tax relief and an easing of environmental deadlines. The supply system had been purged of large amounts of steel inventory.

Going into the fourth quarter, steel companies were raising prices, shipping estimates and profit projections. The violent inventory contraction of the summer was apparently petering out.

"We expect to return to profitable operations for the fourth quarter and the calendar year," said F. G. Jaicks, chairman of Inland Steel Co. "Steel orders from our Midwest customers, most severely affected earlier this year by the recession, have improved sharply in recent weeks."

Going out of October, Inland was operating at 80 pct and looking for business to hold or improve over the rest of the year. That may not seem a very high level until you remember that U. S. Steel operated at only 51 pct in the third quarter. There has been a remarkably quick inventory recovery.

Both the recovery and the earlier slump can be traced to two factors: inventory and the auto industry. When the prime rate hit 20 pct in March, steel users began living on inventory. Steel stockpiles were trimmed by 7 or 8 million tons in the second and third quarters. The slowing of inventory cutting now will add about 2 million tons to fourth quarter shipments.

Both the recovery and earlier slump can be traced to inventory and auto industry.

The auto slump had a devastating effect on steel mills. In August, shipments of steel to the auto industry were down nearly 45 pct from August 1979. The auto companies are buying a little more steel now but not enough more to get sheet producers excited.

"Our incoming order volume from the wide range of industries we service is showing signs of a slow recovery since bottoming-out in July," said D. J. Carney, chairman of Wheeling-Pittsburgh. "We expect a further modest increase during the fourth quarter."

With a large portion of its steel going into sheets, Wheeling-Pittsburgh did not expect to be profitable in the fourth quarter.

One fortunate development in the third quarter was a decline in steel imports. From over 1.6 million tons in May, imports fell to about 1 million tons in September. Very often in the past, recessions have been compounded by continued heavy imports. In 1980, uncertainty about dumping complaints and trigger prices apparently held down foreign volume.

A pleasant surprise has been the strength of steel exports. These are running about 1 million tons ahead of the 1979 pace. With imports down, the relatively high exports reduced the net intake of steel by the U.S. to less than 700,000 tons in September.

Like everyone else, steel men are uncertain about the future. There are fears that market spurt may be a false start and that the real recession is still in the future. Making for added confusion are the price increases due Jan. 1 for sheet and tinplate. By promoting hedge buying for December, these make it difficult to determine the true level of demand.

However, the mills are getting some bullish signals from auto companies and others about the first quarter. One very bullish signal came from within the industry recently. Armco announced it will spend $400 million to build a seamless tube mill at or near Ashland, Ky.

Armco's situation is somewhat unique. With its diversified operations, the company had a record profit of $76 million in the third quarter. "Armco's long-term strategic planning is paying off, particularly in increased earnings from the energy business," said Harry Holiday, chief executive.

However, Armco did make money in steel during the third quarter. And the company's newest commitment is to steel as well as to the energy market. The commitment has its unique aspect. Oil country seamless is one steel product in heavy demand throughout the year. All projections call for long-term strength.

There are special aspects to the Armco program, but other steel com-

3rd Quarter Earnings for Steel, Nonferrous

Steel: About As Bad As Expected

In Millions of Dollars

	Earnings				Sales		
	'80 E/S	3rd Q '80	3rd Q '79	Change	3rd Q '80	3rd Q '79	Change
USS	2.8%	77.00	88.20	-12.7	2,761.10	3,225.00	-14.0
Bethlehem	——	(32.30)	74.80	——	1,479.40	1,801.80	-18.0
Armco	5.5%	76.60	57.57	+33.0	1,401.81	1,287.91	+ 8.8
National	——	(42.00)	39.25	——	866.33	1,111.62	-22.0
Republic	——	(14.50)	29.90	——	833.40	1,030.00	-19.0
Inland	——	(6.08)	33.49	——	704.47	923.10	-24.0
LTV	0.3%	4.90	38.70	-87.0	1,895.10	2,027.40	- 6.5
Total	0.6%	63.62	361.86	-82.0	9,991.28	11,372.81	-12.0
Alleg. Lud.	5.5%	18.50	15.40	+20.0	335.70	394.20	-15.0
Wheel. Pgh.	2.1%	4.72	13.57	-65.0	221.48	336.50	-34.0
Interlake	——	(22.46)	15.57	——	229.40	271.57	-16.0
Kaiser	——	(17.39)	27.60	——	207.16	252.06	-18.0
Cyclops	0.2%	.40	5.40	-93.0	232.79	226.33	+ 2.9
McLouth	——	(28.22)	(6.63)	——	131.69	172.14	-23.0
CF&I	1.2%	1.68	3.90	-57.0	139.20	140.00	- 0.6
Copperweld	3.9%	3.69	5.35	-31.0	95.09	122.41	-22.0
Carpenter	3.9%	4.63	6.91	-33.0	119.28	121.29	- 1.7
Lukens	1.5%	1.64	(1.06)	——	107.68	101.06	+ 6.6
Phoenix	0.6%	.28	.87	-68.0	43.65	41.17	+ 6.1
Florida	7.1%	5.12	3.70	+38.0	72.36	64.89	+12.0
Laclede	3.2%	1.68	(1.474)	——	53.18	59.86	-11.0
Nucor	10.3%	11.50	12.17	- 5.5	111.35	112.90	- 1.4
Eastmet	0.9%	.67	1.36	-51.0	72.22	57.30	+26.0

Nonferrous: Call It A Mixed Bag

In Millions of Dollars

	Earnings			Sales and Other Revenues		
	3rd Q '80	3rd Q '79	Pct Change	3rd Q '80	3rd Q '79	Pct Change
Alcan	$132.0	$104.3	+26.6	$1,308.0	$1,058.0	+23.6
Alcoa	74.7	107.4	-30.0	1,273.0	1,185.9	+ 7.3
Amax	100.3	94.7	+ 5.9	683.5	764.7	-10.6
Asarco	21.2	70.4	-70.0	399.5	397.7	+ 0.5
Callahan Mining	3.0	4.2	-28.6	14.7	14.2	+ 3.5
Cominco*	29.3	44.5	-34.2	344.1	268.1	+28.3
Falconbridge Copper*	7.1	9.2	-22.8	43.4	46.5	- 6.7
Falconbridge Nickel*	8.7	26.3	-66.9	156.3	173.0	- 9.7
Hecla#	17.0	8.9	+91.0	16.5	15.8	+ 4.4
Homestake	27.0	19.2	+40.6	89.0	65.3	+36.3
Inco	38.9	55.9	-30.4	690.0	604.0	+14.2
Kaiser Aluminum	48.9	52.8	- 7.4	761.3	704.8	+ 8.0
Newmont Mining	30.0	44.0	-31.8	——	——	——
Olin	12.1	10.8	+12.0	436.5	441.7	- 1.2
Phelps Dodge	(11.6)	19.2	——	305.9	268.7	+13.8
Revere Copper	5.6	6.1	- 8.2	179.2	191.5	- 6.4
Reynolds	36.6	35.0	+ 4.6	913.7	829.1	+10.2
St. Joe	26.4	23.9	+10.5	339.1	279.0	+21.5
Texasgulf	69.0	35.1	+96.6	285.7	191.3	+49.3

*Canadian funds # includes nonrecurring gains of $6.9 million in 1980 period and $3.1 million in 1979 period.

panies are dusting off their own capital projects. There is no question steel spirits have been revived in the last month or two.

Among the third quarter statements, those of Lukens Steel Co. and Phoenix Steel Corp. were of particular interest. Both companies specialize in steel plates. Although they were affected by the recession, both were profitable in the third quarter.

"The recession in capital goods markets as well as our customers' inventory reduction programs resulted in a continued reduced shipment rate for Lukens," said C. A. Carlson, chairman of the company.

"However, during recent weeks, customers have returned to buying patterns which more nearly reflect actual steel usage," said Mr. Carlson.

Along the same lines, Phoenix looks for "improving sales levels" in the fourth quarter.

These comments are of special interest because of the tie between steel plates and capital spending. Lukens' Mr. Carlson attributes the recent order improvement to an inventory swing rather than any change in the spending rate.

That may be true, but it is unusual for people to stabilize or build inventories unless their own business is better. If the capital goods sector has turned up, it means the whole steel industry is heading toward better times.

No one is predicting a steel boom in 1981. Predictions call for shipments to rise from 83 million tons in 1980 to a range of 91 to 95 million tons next year. A stabilizing of inventories is expected to add about 7 million tons to 1981 shipments. Consumption is expected to increase by about 4 million tons.

Leading **nonferrous** metals producers left a mixed bag of third quarter reports as they moved into an equally tough final period of the year.

The recession took its toll, as did a long strike in the copper industry, but the effects in some cases were softened by improved export business, notably for aluminum and lead, and by higher metal prices in most cases. In copper's case, the recession-caused drop in sales and the costs of the mine strikes were further aggravated by sharply higher imports.

The nation's three largest aluminum producers, Aluminum Co. of America, Reynolds Metals Co. and Kaiser Aluminum & Chemical Corp., sustained a 17.9 pct drop in aggregate third quarter profits despite an 8.4 pct increase in sales. Tonnage shipments were off a shade under 1 pct.

Recession-impacted sales volume was felt mainly in the mill product sector; ingot demand and export demand were quite firm although perhaps a bit softer than in the first half of the year. The third quarter was the first period under the new labor three-year wage pacts negotiated last spring, but industry sources said results were adversely affected by higher energy and transportation costs as well.

Canada's Alcan Aluminium Ltd., on the other hand, reported a 26.6 pct increase in third quarter profits on 23.6 pct increase in sales and a 12.8 pct jump in tonnage shipments. Alcan's third quarter 1979 operations were hit by a strike at its Quebec facilities.

The recession took its toll on the copper industry but improved export business was seen.

David P. Reynolds, chairman of Reynolds Metals, said second half shipments were holding up better than expected and third quarter shipments were helped by export sales. The company managed a 4.6 pct increase in third quarter net, while Alcoa's and Kaiser's were lower. Kaiser Aluminum chairman Cornell C. Maier projected a much larger drop in fourth quarter net than the 7.3 pct dip in the third quarter. Alcoa chairman W. H. Krome George noted that the company's third quarter shipments "held up well," but profits were hit by "higher costs for energy and energy-related goods and services, plus increased labor costs and a shift in product mix."

The copper mine and smelter strikes pushed Phelps Dodge and Kennecott into the red. Kennecott, which had a $51 million loss compared with net income of $23.4 million in the third quarter of 1979, said the strike alone cost it an estimated $62.5 million. Sales fell 18.9 pct to $387.7 million and refined copper production was down 77 pct to 20,326 tons. Phelps Dodge had an $11.6 million loss compared with net of $19.2 million in the third quarter last year as the strike pulled sales down to 46,200 tons from 82,700 tons in the third quarter of 1979.

Neither copper producers nor consumers are overburdened with inventory as the strikes slowly wind down, but the slow rate of recovery from the recession, plus the economic declines in Europe and heavy import volume pose a lot of questions for the copper outlook in the final months of this year and at least the early part of 1981. Asarco's operations were adversely impacted by the copper strike and a strike at its El Paso lead plant, but chairman Charles F. Barber noted that higher silver prices and operations of associated companies in Australia, Peru and Mexico continued at satisfactory levels.

Higher lead and zinc prices helped St. Joe Minerals Corp. to a better third quarter showing. Lower lead inventories and the approaching start of the 1980-81 automobile battery season have lead producers generally optimistic about prospects over the near term at least. Zinc demand was beginning to reflect the modest improvement in automotive demand toward the middle of the current quarter.

Substantial exports of lead to mainly West European markets also have helped lead's market situation again this year. The Soviet Union has been a sizeable lead importer since early 1979 and industry sources here attribute the buying to industrial development in Siberia, which increases the use of lead in construction equipment and truck batteries, as well as electrical conductor shielding.

Lower nickel demand cut deeply into third quarter net of Inco Ltd. and Falconbridge Nickel. Inco's net was down 30.4 pct to $38.9 million. Losses attributable to the company's Guatemalan and Indonesian nickel operations declined to $12 million from $20 million in the third quarter of 1979.

Amax Inc. also reported lower nickel and copper sales, but said the impact was partially offset by higher sales of molybdenum and the inclusion of phosphate and sales of Rosario Resources.

Amax managed a 5.9 pct rise in third quarter net to $100.3 million despite the copper strike and a weak U.S. economy. The company's 50 pct equity interest in earnings of Alumax Inc., a San Mateo-based integrated aluminum producer, was $12.2 million. Amax chairman Pierre Gousseland said increased exports of primary aluminum ingot were offset by lower mill products margins and shipments. ☐

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	248	242	221	282
Buffalo	42	43	46	71
Pittsburgh	390	379	343	419
Youngstown	110	108	80	153
Cleveland	117	113	131	157
Detroit	174	166	140	195
Chicago	620	584	466	581
Cincinnati	96	90	78	100
St. Louis	91	72	48	86
Southern	198	224	210	243
Western	128	125	133	167
U.S. Production	2,214	2,146	1,896	2,454

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80. 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80

Steel Production, Composite Prices

(Effective November 3, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,214	2,146	91,088	116,196
Capability Utilization Rate	75.0	72.7	70.9	89.1

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 10/5/80)	22.019	22.019	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton 2240 lbs.)	$ 97.83	$ 97.17	$ 96.17	$ 86.83
No. 2 bundles	$ 71.50	$ 72.17	$ 70.50	$ 56.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$102.50	$104.50	$ 87.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	86.50
No. 1 steel, Chicago	97.50	97.50	92.50	86.50
No. 1 bundles, Detroit	93.50	93.50	93.50	92.50
Low Phos., Youngstown	105.50	105.50	100.50	97.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	124.50	124.50	120.50	145.50

---

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago

Nonferrous Prices

(Effective November 3, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	95.45-100.00	97.45-100.00	11/3/80
Lead	45.00	42.00-45.00	10/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	39.50-39.75	37.75-39.50	10/29/80

ALUMINUM 99.5% Ingot. COPPER (C) cathode. LEAD common grade. MAGNESIUM 99.8% pig, Velasco, Tex. NICKEL briquette, Port Nickel, La. ZINC Prime Western

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be. per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 39%, 250 kg	$25.00
Gold per troy oz.	$629.00
Indium, 99.9%, per troy oz.	$14.50-$20.00
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$405-$410
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$225
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$18.90
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Oct. 27—737.05
Oct. 28—729.75
Oct. 29—736.12
Oct. 30—733.71
Oct. 31—726.32

Scrap Prices

Brass Mill Scrap

(cents per lb: over 20,000 lbs. add 1¢ per lb)

	Solids	Turnings
Copper	91	81¾
Yellow brass	73¾	68⅝
Red brass	81¾	75⅜
Comm. bronze	84½	77½
Mang. bronze	71⅞	70⅛
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	84
No. 2 copper wire	72
Light copper	63

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire		80
No. 2 copper wire		68
Light copper		59
No. 1 composition		72
No. 1 comp. turnings		71
Hvy. yellow brass solids		41
Hvy. yellow brass turnings		32
Radiators		53
Aluminum		
New mixed clips	41	—42
Old sheet	38	—39
Old cast	38	—39
Clean dry borings	39	—40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	48	—49
Mixed L.C. clips	38	—39
Old sheets and cast	31	—32
Boring and turnings	26	—27
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	75	—76
No. 2 copper wire	65	—66
Light copper	59	—60
Radiators	48	—49
No. 1 composition	63	—64
No. 1 composition turn'gs	60	—61
Cocks and faucets	46	—47
Clean heavy yellow brass	39	—40
Brass pipe	45	—46
New soft brass clippings	54	—55
Yellow brass rod ends	46	—47
Lead		
Heavy soft lead	21	—22
Whole batteries	10	—11
Type metal	22	—23
Electrotype	30	—31
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

MATERIALS NEWSFRONT

(Effective November 3, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	94.00 to 95.00
No. 1 dealer bundles	113.00 to 114.00
No. 1 factory bundles (auto)	111.00 to 112.00
No. 2 bundles	66.00 to 67.00
No. 1 busheling	113.00 to 114.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	119.00 to 120.00
Heavy turnings	94.00 to 95.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	125.00 to 126.00
Scrap rails, random lgth.	115.00 to 116.00
RR specialties	116.00 to 117.00
No 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	91.00 to 92.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles (auto)	116.00 to 117.00
No. 2 dealer bundles	83.00 to 84.00
No. 1 busheling	104.00 to 105.00
Shredder scrap	109.00 to 110.00
Machine shop turn.	45.00 to 46.00
Mixed bor. and turn	46.00 to 47.00
Shoveling turnings	49.00 to 50.00
Cast iron borings	70.00 to 71.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	123.00 to 124.00
No.1 RR hvy. melting	101.00 to 102.00
Scrap rails, random lgth.	110.00 to 111.00
Reroller rails	126.00 to 127.00
Rails, 2 ft. and under	134.00 to 135.00
RR couplers and knuckles	121.00 to 122.00
RR car axles	151.00 to 152.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	115.00 to 116.00
Stove plate	107.00 to 108.00
Steel car wheels	116.00 to 117.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	135.00 to 145.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	80.00 to 83.00
No. 1 dealer bundles	107.00 to 110.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	107.00 to 110.00
Shredder scrap	105.00 to 108.00
Machine shop turn.	37.00 to 40.00
Mixed bor. and turn.	37.00 to 40.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	117.00 to 120.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 83.00 to $ 84.00
No. 2 hvy. melting	79.00 to 80.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	49.00 to 50.00
No. 1 busheling	90.00 to 91.00
Drop forge flashings	79.00 to 80.00
Machine shop turn.	50.00 to 51.00
Mixed borings and turn.	34.00 to 35.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	68.00 to 69.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	90.00 to 91.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No 1 hvy melting	$ 97.00 to $ 98.00
No 2 hvy melting	82.00 to 83.00
No 1 dealer bundles	99.00 to 100.00
No 2 dealer bundles	70.00 to 71.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	32.00 to 33.00
Low phos plate	105.00 to 106.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	95.00 to 96.00

Cleveland

No 1 hvy melting	$ 88.00 to $ 89.00
No 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No 1 factory bundles	108.00 to 109.00
No 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn	17.00 to 18.00
Mixed bor and turn	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	129.00 to 130.00
Low phos. punchings plate	129.00 to 130.00
Drop forge flashings	60.00 to 61.00
Foundry steel, 2 ft. & under	94.00 to 95.00
No 1 RR hvy. melting	109.00 to 110.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	76.00 to 77.00
Railroad cast	115.00 to 116.00
No 1 machinery cast	115.00 to 116.00
Cupola cast	100.00 to 101.00
Stove plate	75.00 to 76.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy melting	$ 69.00 to $ 70.00
No 2 hvy melting	57.00 to 58.00
No 1 busheling	76.00 to 77.00
No 1 dealer bundles	74.00 to 75.00
No 2 dealer bundles	44.00 to 45.00
Machine shop turn	12.00 to 13.00
Mixed bor and turn	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth	66.00 to 67.00
No 1 machinery cast	116.00 to 117.00
No 1 cupola cast	84.00 to 85.00

St. Louis

No 1 hvy melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	93.00 to 94.00
No 2 bundles	75.00 to 76.00
Machine shop turn	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	35.00 to 36.00
No 1 RR hvy. melting	93.00 to 94.00
Rails, random length	80.00 to 81.00
Rails, 18 in. and under	95.00 to 96.00
RR specialties	80.00 to 81.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	97.00 to 98.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No 1 heavy melting	$ 96.00 to $ 97.00
No. 2 heavy melting	89.00 to 90.00
No 1 dealer bundles	97.00 to 98.00
No 2 bundles	73.00 to 74.00
No 1 busheling	94.00 to 95.00
Shredder scrap	105.00 to 106.00
Machine shop turn	32.00 to 33.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	41.00 to 42.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	86.00 to 87.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	103.00 to 104.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth	103.00 to 104.00
Rails, 18 in. and under	121.00 to 122.00
Angles and splice bars	104.00 to 105.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	82.00 to 83.00

Cincinnati

Brokers buying prices per gross ton on cars

No 1 hvy melting	$ 67.00 to $ 68.00
No 2 hvy melting	58.00 to 59.00
No 1 dealer bundles	87.00 to 88.00
No 2 bundles	47.00 to 48.00
Machine shop turn	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	25.00 to 26.00
Low phos 18 in and under	110.00 to 111.00
Rails, random length	115.00 to 116.00
Rails, 2 ft. and under	122.00 to 123.00
No 1 cupola cast	76.00 to 77.00
Heavy breakable cast	35.00 to 36.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars

No 1 hvy melting	$ 59.00 to $ 60.00
No 2 hvy melting	53.00 to 54.00
No 2 dealer bundles	39.00 to 41.00
Mixed bor and turn	7.00 to 8.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem borings	34.00 to 35.00
No 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars

No 1 hvy. melting	$ 70.00 to $ 72.00
No. 2 hvy. melting	63.00 to 65.00
No 1 dealer bundles	78.00 to 80.00
No 2 bundles	42.00 to 44.00
No 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	25.00 to 27.00
No 1 machinery cast	135.00 to 140.00
Mixed cupola cast	71.00 to 73.00
Heavy breakable cast	15.00 to 17.00

San Francisco

No. 1 hvy melting	$ 92.00 to $ 94.00
No. 2 hvy melting	82.00 to 84.00
No 1 dealer bundles	77.00 to 79.00
No 2 dealer bundles	62.00 to 64.00
Machine shop turn	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No 1 cupola cast	106.00 to 108.00

Los Angeles

No 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	120.00 to 122.00
No 1 cupola cast	112.00 to 114.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	107.00 to 109.00
Mixed yard cast	97.00 to 99.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 78.00
No 2 heavy melting cut 2 ft. and under	66.00
No 1 dealer bundles	78.00
No 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd	75.00
Bush. new fact. unprep'd	64.00
Machine shop turn	25.00
Short steel turn	25.00
Mixed bor. and turn	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	95.00 to 96.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Crushed turnings	53.00 to 54.00
Shredder scrap	102.00 to 103.00
Cut structural plate 2 ft. and under	128.00 to 129.00
Unstripped motor blocks	86.00 to 87.00
Cupola cast	105.00 to 106.00

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	260	248	232	281
Buffalo	44	42	41	69
Pittsburgh	404	390	335	407
Youngstown	116	110	102	143
Cleveland	125	117	131	157
Detroit	169	174	137	169
Chicago	636	620	476	590
Cincinnati	92	96	82	95
St. Louis	90	91	66	84
Southern	203	196	216	243
Western	135	128	132	168
U.S. Production	2,274	2,214	1,950	2,406

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80

Steel Production, Composite Prices

(Effective November 10, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,274	2,214	93,362	118,588
Capability Utilization Rate	77.0	75.0	71.1	88.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 10/5/80)	22.019	22.019	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.17	$ 97.83	$ 95.50	$ 88.83
No. 2 bundles	$ 72.17	$ 71.50	$ 70.50	$ 56.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$104.50	$102.50	$ 87.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	88.50
No. 1 steel, Chicago	97.50	97.50	92.50	90.50
No. 1 bundles, Detroit	96.50	93.50	93.50	87.50
Low Phos., Youngstown	105.50	105.50	100.50	97.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	124.50	124.50	120.50	147.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

* * Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S

* * * Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective November 10, 1980)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	93.85-97.00	93.80-97.00	11/10/80
Lead	45.00	42.00-45.00	10/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	39.50-39.75	37.75-39.50	10/29/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$596.00
Indium, 99.9%, per troy oz	$14.50-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$410-$415
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$225
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$18.00
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Nov. 3—720.30	Nov. 6—Holiday
Nov. 4—716.81	Nov. 7—708.97
Nov. 5—717.01	

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	89⅝	80⅛
Yellow brass	72⅛	67
Red brass	80⅛	73¾
Comm. bronze	82⅞	75⅝
Mang. bronze	70¼	68½
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	82
No. 2 copper wire	70
Light copper	61

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	78
No. 2 copper wire	66
Light copper	57
No. 1 composition	72
No. 1 comp. turnings	71
Hvy. yellow brass solids	41
Hvy. yellow brass turnings	32
Radiators	53

Aluminum

New mixed clips	41	—42
Old sheet	38	—39
Old cast	38	—39
Clean dry borings	39	—40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	48	—49
Mixed L.C. clips	38	—39
Old sheets and cast	31	—32
Boring and turnings	26	—27
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	76	—77
No. 2 copper wire	66	—67
Light copper	60	—61
Radiators	49	—50
No. 1 composition	64	—65
No. 1 composition turn'gs	61	—62
Cocks and faucets	47	—48
Clean heavy yellow brass	40	—41
Brass pipe	46	—47
New soft brass clippings	55	—56
Yellow brass rod ends	47	—48
Lead		
Heavy soft lead	21	—22
Whole batteries	10	—11
Type metal	22	—23
Electrotype	30	—31
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE NOV. 10, 1980

MATERIALS NEWSFRONT

(Effective November 10, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	111.00 to 112.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	113.00 to 114.00
Machine shop turn	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	119.00 to 120.00
Heavy turnings	94.00 to 95.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	125.00 to 126.00
Scrap rails, random lgth	115.00 to 116.00
RR specialties	116.00 to 117.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	91.00 to 92.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles (auto)	116.00 to 117.00
No. 2 dealer bundles	82.00 to 83.00
No. 1 busheling	104.00 to 105.00
Shredder scrap	109.00 to 110.00
Machine shop turn	48.00 to 49.00
Mixed bor. and turn	49.00 to 50.00
Shoveling turnings	52.00 to 53.00
Cast iron borings	70.00 to 71.00
Low phos. forge crop	121.00 to 122.00
Low phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	123.00 to 124.00
No. 1 RR hvy. melting	101.00 to 102.00
Scrap rails, random lgth	110.00 to 111.00
Reroller rails	126.00 to 127.00
Rails, 2 ft. and under	134.00 to 135.00
RR couplers and knuckles	121.00 to 122.00
RR car axles	151.00 to 152.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	115.00 to 116.00
Stove plate	107.00 to 108.00
Steel car wheels	116.00 to 117.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	135.00 to 145.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	80.00 to 83.00
No. 1 dealer bundles	107.00 to 110.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	107.00 to 110.00
Shredder scrap	104.00 to 107.00
Machine shop turn	37.00 to 40.00
Mixed bor. and turn	37.00 to 40.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	122.00 to 125.00
Electric furnace bundles	117.00 to 120.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	122.00 to 125.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 84.00 to $ 85.00
No. 2 hvy. melting	83.00 to 83.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	51.00 to 52.00
No. 1 busheling	93.00 to 94.00
Drop forge flashings	82.00 to 83.00
Machine shop turn	43.00 to 44.00
Mixed borings and turn.	35.00 to 36.00
Shoveling turnings	43.00 to 44.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	68.00 to 69.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	90.00 to 91.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	70.00 to 71.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	32.00 to 33.00
Low phos. plate	105.00 to 106.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	95.00 to 96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn	17.00 to 18.00
Mixed bor. and turn	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	129.00 to 130.00
Low phos. punchings plate	129.00 to 130.00
Drop forge flashings	60.00 to 61.00
Foundry steel, 2 ft. & under	94.00 to 95.00
No. 1 RR hvy. melting	109.00 to 110.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	76.00 to 77.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	100.00 to 101.00
Stove plate	75.00 to 76.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn	12.00 to 13.00
Mixed bor. and turn	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	75.00 to 76.00
Machine shop turn	20.00 to 21.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	80.00 to 81.00
Rails, 18 in. and under	95.00 to 96.00
RR specialties	80.00 to 81.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	97.00 to 98.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 96.00 to $ 97.00
No. 2 heavy melting	89.00 to 90.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	95.00 to 96.00
Shredder scrap	105.00 to 106.00
Machine shop turn	32.00 to 33.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	41.00 to 42.00
Electric furnace bundles	97.00 to 98.00
Elec. furnace, 3 ft. & under	86.00 to 87.00
Structural and plate, 2 ft.	115.00 to 116.00
Structural and plate, 4 ft.	104.00 to 105.00
No. 1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth	104.00 to 105.00
Rails, 18 in. and under	121.00 to 122.00
Angles and splice bars	104.00 to 105.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	84.00 to 85.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	58.00 to 59.00
No. 1 dealer bundles	87.00 to 88.00
No. 2 bundles	47.00 to 48.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	110.00 to 111.00
Rails, random length	115.00 to 116.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	35.00 to 36.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 59.00 to $ 60.00
No. 2 hvy. melting	53.00 to 54.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn	7.00 to 8.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 72.00
No. 2 hvy. melting	63.00 to 65.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 bundles	42.00 to 44.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	25.00 to 27.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	71.00 to 73.00
Heavy breakable cast	15.00 to 17.00

San Francisco

No. 1 hvy. melting	$ 92.00 to $ 94.00
No. 2 hvy. melting	82.00 to 84.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 dealer bundles	62.00 to 64.00
Machine shop turn	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	106.00 to 108.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	120.00 to 122.00
No. 1 cupola cast	112.00 to 114.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	107.00 to 109.00
Mixed yard cast	97.00 to 99.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 heavy melting	$ 78.00
No. 2 heavy melting cut 2 ft. and under	66.00
No. 1 dealer bundles	78.00
No. 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd.	75.00
Bush. new fact. unprep'd	64.00
Machine shop turn	25.00
Short steel turn.	25.00
Mixed bor. and turn	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	95.00 to 96.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Crushed turnings	53.00 to 54.00
Shredder scrap	102.00 to 103.00
Cut structural plate 2 ft. and under	128.00 to 129.00
Unstripped motor blocks	86.00 to 87.00
Cupola cast	105.00 to 106.00

MACHINE TOOL TASK FORCE REPORT:
PART TWO OF A TWO-PART SERIES

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WHAT IT TAKES
ON THE LEADING
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IRON AGE

VOL. 223, NO. 43

DECEMBER 1, 1980

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The company has been praised by both the EPA and the community for efforts made in the area of compliance with pollution control laws. (Cover photo courtesy of Allegheny Ludlum)

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What's behind the foreign import surge?

IRON AGE (ISSN 0021-1508) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING ORDER TRENDS

Is industry playing a waiting game with capital goods orders?

Revised figures on durables new orders for October will be out in a few days. That data will provide an important sizing up of the strength of the recovery in orders that started in July.

Even if the final October order figures turn out to merely hold their September level, then the recovery can be said to be solid and promising.

In September, orders of $78.1 billion were up 9 pct from August. More importantly, they were up more than 17 pct from a June low point. June was at the bottom of a slide in orders than ran for 5 straight months.

It is, of course, important to measure progress in orders beyond the time frame of single months. This is because durables orders are relatively volatile under any conditions—and especially so during periods of shifts in business cycles. Month-to-month changes in specific industries can greatly color the total durables order figure.

For example, September orders in the aircraft and parts industry jumped by 69 pct—up $2.2 billion to $5.4 billion. And this jump accounted for more than one-third of the rise in total durable new orders for the month.

Still, the September rise in orders was a broadly based one. All industry categories except electrical machinery reported increases.

A strong spot in the September orders gain was a near-11 pct rise in orders for nonelectrical machinery.

The element of durable goods orders that seems to rate special attention at this time is those orders flowing to producers of nondefense capital goods. These orders were up 6 pct in September to $20.5 billion. That is a good sign. But it is also true that these orders have been on a virtual plateau since early in the year.

There is an increasingly posed post-election question that centers on plant spending. Will the water-treading continue for months further while industry waits to see what incentives for plant outlays that President-elect Reagan will come up with?

If industry carries on its waiting game to that extent, then the entire economic recovery could be slowed down. Most forecasts of steady recovery next year are based on solid gains in capital spending.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	3rd Qtr.	$191.2*	$193.9	$179.3
Manufacturing, Total	3rd Qtr.	87.3*	88.8	80.2
Manufacturing, Durable Goods	3rd Qtr.	40.4*	42.8	39.7
Mining Industry	3rd Qtr.	6.4*	6.6	5.4
Key Indicators, Durable Goods Manufacturing				
New Orders	Sept.	78.1	71.6	77.6
Shipments	Sept.	76.2	72.1	74.2
Inventories	Sept.	160.8	161.1	146.0
Unfilled Orders	Sept.	273.5	271.6	261.7
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Sept.	20.5	19.4	21.6
Capital Goods Producers, Defense Industries	Sept.	5.9	3.9	4.2
Primary Metals, Total	Sept.	12.5	11.4	11.9
Steel (SIC 331)	Sept.	6.2	5.6	4.8
Iron & Steel Castings (SIC 332)	Sept.	1.0	.9	2.1
Nonferrous Metals	Sept.	5.3	4.9	5.0
Nonelectrical Mach.-Equip. Industries, Total	Sept.	14.3	12.9	14.0
Engines & Turbines	Sept.	1.1	1.1	1.2
Farm Machinery & Equipment (Shipments)	Sept.	1.1	1.1	1.3
Construction, Mining & Materials Hdlg. Equip.	Sept.	2.6	2.5	2.9
General Industrial Machinery	Sept.	1.1	1.0	1.0
Fluid Power Equipment** (Index-1972=100)	Sept.	234	185	283
Metalworking Machinery	Sept.	1.0	1.0	1.3
Machine Tools, Total (Millions $, Unadjusted)	Sept.***	374.5	224.5	545.6
Machine Tools, Metal-Cutting	Sept.***	295.7	165.1	475.1
Machine Tools, Metal-Forming	Sept.***	78.8	59.4	70.5
Electrical Mach. & Equip. Industries, Total	Sept.	10.0	10.8	9.8
Elec. Transmission Equip. & Industrial Apparatus	Sept.	1.6	1.7	1.7
Household Appliances	Sept.	1.2	1.2	1.1
Communication Equipment	Sept.	3.0	3.7	3.1
Transportation Equip. Industry, Total	Sept.	17.1	13.6	18.0
Motor Vehicles & Parts (Shipments)	Sept.	8.7	8.6	10.1
Aircraft, Missiles & Parts	Sept.	5.4	3.2	5.7
Shipbuilding & Military Tanks	Sept.	2.0	1.2	.9
Fabricated Metal Products, Total	Sept.	8.9	8.5	8.9
Instruments, Total	Sept.	3.5	3.5	3.2

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

CHINA FINDS IT HARD TO SHAKE THE YOKE OF FOREIGN STEEL

Industry is plagued by haphazard policies and outdated facilities.

By Robert E. Harvey

For years, the steel industry in the People's Republic of China has been a national headache. Haphazard policies have led to outdated facilities, heavy dependence on foreign steel and technology, and erratic growth.

To remedy the situation, Chinese leaders are again huddling to try and realign priorities, but while this huddle lasts many scheduled projects have been put on hold.

"Nationwide, China has canceled some 300 heavy industrial projects pending development of a new ten-year plan," explained Michael Janner, manager, China Operations, Kaiser Engineers Inc., Oakland, Cal.

The ten-year plan, expected last spring, is still in the works and reports indicate that it may be next spring before new policies are known.

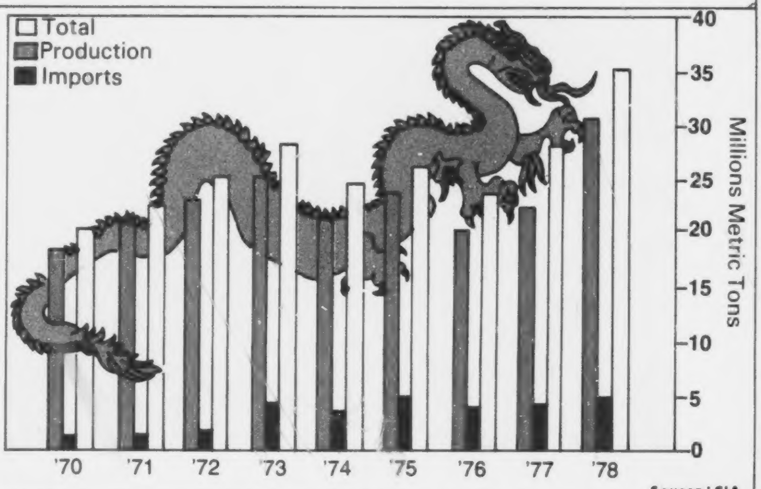
Seeing the cutback in contracts some U.S. businessmen fear China will retrench and abandon many of its innovative modernization policies. Their beliefs have been strengthened by recent denunciations of the steel industry by the China press. The reports cite the tremendous expenditures and the meager returns as well as bottlenecks in mining and production. Highly publicized has been the fact that while China imports over five million metric tons of steel a year, it has 25 million tons of unused steel just sitting around, much of it unusable due to its poor quality and its wrong shape. Reportedly, much of the idle material is heavy roll steel, which, although not needed, continues to be churned out.

"There is a train of thought right now which concludes that big investments are wasteful," explained Martin Weil, of the National Council for US-China Trade. "For example, the China newspapers have publicized a cold rolling mill at Wuhan which was erected by the Germans, but due to a lack of electrical supply only operates at 10 pct of capacity."

Experts caution, however, that because the steel industry has temporarily become the whipping boy of the press, it does not mean that China will abandon its steel industry.

"The cancellations do not mean that we will never have a market as some people fear," said Mr. Janner, "but it is a period of heavy industry slowdown so that more realistic policies can be implemented." Mr. Jenner went on to explain that in the past China wanted to do every thing all at once but is now realizing that timing is important. China wanted to build new steel mills as well as energy grids and transportation systems at the same time. The policy produced crippled mills such as the cold rolling facility at Wuhan.

China's Steel Supply Creeps Upward



Source: CIA

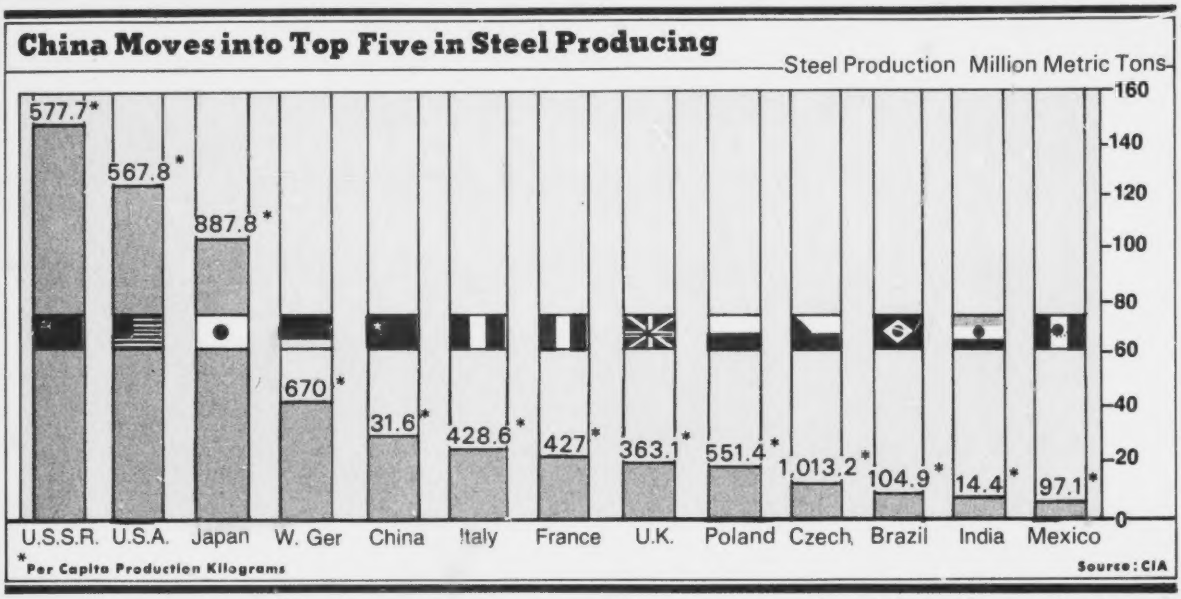
Much of China's effort today is away from the green field factories and brown field renovations. "If you recall two or three years ago the Chinese came out with a very ambitious program for increasing steel capacity," explained Jeremy C. T. Thomas, executive vice president, Wean United Inc. "They have cut back because they have realized that the total investment is so tremendous, not only in capital requirements but in skilled technical people needed to build and man new factories. They are cutting back in some areas but intend to upgrade some existing facilities."

Upgrading existing facilities does not mean that China does not want the large modern facilities but sees that renovation of existing mills is a stop gap procedure which will provide steel while the energy and transportation grids are being put in place.

Besides holding up much of the large steel mill development, China is also putting a hold on many iron ore mine development projects.

"Iron ore priorities seem to be on the back burner right now, there seems to be some glum faces in the industry," said one Commerce Department spokesman.

The Bethlehem International Engineering Corp. Group, for example, is proceeding with engineering studies in connection with the Shuichang



iron ore mine and mine facilities, but has announced that procurement and construction is being held up. Bethlehem has been working with the People's Republic of China on the major expansion of an existing open pit mine and the construction of a new beneficiation plant and pelletizing facility. The firm has been providing technical, engineering and management advisory services, and certain mine planning and testing help.

Kaiser Engineers has been involved in developing a new iron ore mine, the Sijiaying complex, and expanding an old one, the Nanfen project. Both will be large open pit mines. Kaiser has finished the conceptual engineering for the projects but so far has not received any follow-up contracts. The company, however, is optimistic that substantial contracts will follow. "Theoretically there always was a possibility of a pause between the preliminary engineering and construction but now that pause seems to be protracted a little," explained a spokesman. "However in the long run we are very hopeful that we will be further involved in the projects because despite current slowdowns, the Chinese understand the necessity of increasing steel capacity."

Regarding the steel facilities themselves, China has put a freeze on many foreign development contracts. Previous plans had called for major expansions at seven or eight large existing plants and the construction of two or three completely new facilities by 1985. In line with these plans, the Chinese had already started work on a new six-million ton facility at Baoshan (near Shanghai) and were negotiating for a ten-million ton plant east of Beijing. Costs of the projects were estimated respectively at $4 billion and $14 billion. Negotiations regarding the Beijing facility reportedly have been suspended, while the second stage of the Baoshan project has been put on hold.

Work on stage one, however, already has been contracted out and is proceeding (although eight months late). When stage one is completed Baoshan will boast a huge blast furnace with an annual pig iron production capacity of three million tons, plus a BOF, a semi-finished steel mill and a coking plant. China has already parceled out $1.5 billion for finishing mills and other facilities. Wean United, Inc., Pittsburgh, is receiving an $80 million share of a half-billion dollar contract for a cold rolling mill at the complex. Wean United is a member of a 17-firm consortium headed by Schloemann-Siemag, a German company.

> **To ease bottlenecks and increase capacity, China needs large quantities of capital.**

The U.S. firm invested much time and effort to land the China contract. "It took a lot of patience and a lot of people devoting large amounts of time and effort not only here in the U.S. but living for large amounts of time in China," said Mr. Thomas. "It is a job that you cannot do by long distance phone. You have to have a physical presence there day in and day out during the preorder stages. In fact, the consortium was in China off and on for 17 months and at one time had 85 people there; a few people were over there for the majority of those 17 months."

C-E Lummus, Bloomfield, N.J. is also involved in the project. The firm has agreed to offer its coking process for a coker being built by Toyo Engineering Corp. Another U.S. firm aiding China's steel effort is Midland-Ross Corp., which has signed a $20 million contract for three walking-beam reheat furnaces.

These companies and other U.S. and foreign firms are anxiously waiting to see what China's new ten-year plan for the steel industry will hold in store. Whatever the new policy will be, it will have little chance of solving all the problems and easing all the bottlenecks that permeate this industry.

As mentioned earlier, erratic growth over the past 20 years has made the task of formulating a coherent steel development policy extremely difficult. A modern steel industry cannot operate in a vacuum. Energy and transportation systems must be developed, workers must be trained, and high grade ore must be on hand (most of China's ore deposits, although large, are of low quality and must be upgraded before steel can be produced). Finishing facilities must also be present to transform the steel into workable shapes.

However, according to a 1979 CIA study: "the output of pig iron in China has fallen behind the needs of the steel furnaces, and blast furnace requirements for iron ore are not

Contracts Signed for Baoshan Steel Complex, March-June 1980

Company	Facility	Value, $Millions	Annual Capacity Million Tons	Delivery	Start-Up	Date (Announced) or Signed*	Financing
17-company consortium led by Schloemann-Siemag, including Wean United, Nippon Steel Corp., Siemens AG	Cold-rolling mill	$500 m (Total cost $730 m including Chinese portion)	2.1	NA	1985		Payment: half is remainder in mark, yen, and French francs; to be paid back 5 years after completion: U.S. portion of $80 million financed possibly 75% by the Exim Bank
Mitsubishi Heavy Industries, Mitsubishi Corp.	Hot-strip mill	342	4	Early 1981	Summer 1985	3/25/80	Payment on 5-years deferred basis, half in yen, half in dollars; 10% advance, 10% on shipment, 80% over five years
Nippon Steel	6 pkges, including chem. plant, power center & power distribution pipings	300	—	NA	NA	5/9/80*	NA
Mannesmann Demag-Meer AG	Continuous tubing mill for seamless steel pipes	260	0.5	NA	Late 1982	(3/11/80)	85% financing of 5-year credit agreement by Ausfuhrkredit Gesellschaft & Bank of China: to be repaid in 10 half-yearly instalments; possible Hermes Ins. Co. guarantee
Hitachi Shipbuilding & Engin. Co.	Iron ore	77	4.5	Spring 1982	Spring 1983	5/9/80*	Payment: half in yen, half in dollars over 5 years
Toyo Engineering, C-E Lummus	Engineering and construction of coker: Lummus proprietary coking process	NA	(215 tons per day)	NA	NA	(3/25/80*)	NA
Mitsubishi Hvy. Industries, Mitsubishi Corp., Trinity Develop. Co. Ltd.	Construction of 18 maintenance shops. 4 warehouses	35.7	—	June 1981	April 1983	(4/16/80)	Payment: half in yen, half in dollars, 5-year deferred basis
Total Value		$1,514.7 Million					

Source: National Council for U.S.-China Trade

being met. Similarly China's steel finishing sector is unable to process the outflow of crude steel." China's strong suit is the production of crude steel.

To ease bottlenecks and increase capacity, China needs large quantities of capital, but money is in short supply and is being syphoned off for top priority aid to the agricultural and light industry development.

The final kicker is that despite all these problems China must increase steel production and do it rapidly. According to the CIA report "steel is now the largest single category in China's import bill. Steel imports reached almost $1.5 billion in 1977, nearly four times the figure for 1970. Finished steel items—primarily plate, sheet, tube, and pipe—account for about 90 pct of Chinese purchases and probably reached seven million tons last year (1978)."

The report predicts that even with a stepped up modernization program China will be importing steel products for a number of years to come. In addition increasing amounts of iron ore will be purchased until all domestic oil mining and ore-preparation facilities are greatly expanded. The Chinese are faced with a formidable predicament—cut back production and lose money or expand production and spend staggering amounts of cash.

As an economy measure, China evidently has shown increased interest in upgrading existing facilities (although a number of them are very primitive) rather than building new ones. However, even if plans are being scaled down, foreign technology and expertise is still in demand.

"I think that there will still be an interest in finishing facilities," said Mr. Thomas. "Even though they may not be building complete new plants, they will be needing facilities to round off some of their existing ones. The Chinese have asked us to look at a couple of existing facilities with a view toward modernizing and automating them. We are not discouraged and expect to have a continuing presence here."

Over the long term, the Chinese recognize the necessity of large integrated steel mills. However, because of insufficient funds and the lack of supporting industries, stopgap measures, such as the renovation of smaller mills, are getting attention.

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	245	260	234	290
Buffalo	45	44	42	70
Pittsburgh	420	404	351	408
Youngstown	113	116	104	147
Cleveland	129	125	130	159
Detroit	180	169	164	161
Chicago	623	636	522	590
Cincinnati	97	92	87	94
St. Louis	99	90	75	91
Southern	232	203	214	230
Western	136	135	141	170
U.S. Production	2,319	2,274	2,064	2,410

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as cf 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective November 17, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,319	2,274	95,681	120,947
Capability Utilization Rate	78.5	77.0	71.2	88.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 12/1/80)	22.286	22.019	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.17	$ 98.17	$ 95.50	$ 92.50
No. 2 bundles	$ 72.83	$ 72.17	$ 70.50	$ 57.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$105.50	$102.50	$ 94.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	88.50
No. 1 steel, Chicago	97.50	97.50	92.50	94.50
No. 1 bundles, Detroit	96.50	96.50	93.50	88.50
Low Phos., Youngstown	105.50	105.50	105.50	97.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	124.50	124.50	120.50	148.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective November 17, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	75.00	72.00-76.00	10/13/80
Copper (C)	93.00-96.00	94.00-96.00	11/14/80
Lead	43.00-45.00	45.00	11/11/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	39.50-39.75	37.75-39.50	10/29/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$612.50
Indium, 99.9%, per troy oz.	$14.50-$20.00
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$405-$410
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$225
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$18.50
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Nov. 10—Holiday
Nov. 11—707.23
Nov. 12—704.64
Nov. 13—705.63
Nov. 14—708.23

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	89¾	80½
Yellow brass	72½	67⅜
Red brass	80⅞	74¼
Comm. bronze	83¼	76¼
Mang. bronze	70⅝	68⅞
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	84
No. 2 copper wire	72
Light copper	63

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	80
No. 2 copper wire	68
Light copper	59
No. 1 composition	74
No. 1 comp. turnings	73
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	34
Radiators	55

Aluminum

New mixed clips	41	—42
Old sheet	38	—39
Old cast	38	—39
Clean dry borings	39	—40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	48	—49
Mixed L.C. clips	38	—39
Old sheets and cast	31	—32
Boring and turnings	26	—27
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	76	—77
No. 2 copper wire	66	—67
Light copper	60	—61
Radiators	49	—50
No. 1 composition	64	—65
No. 1 composition turn'gs	61	—62
Cocks and faucets	47	—48
Clean heavy yellow brass	40	—41
Brass pipe	46	—47
New soft brass clippings	55	—56
Yellow brass rod ends	47	—48
Lead		
Heavy soft lead	21	—22
Whole batteries	10	—11
Type metal	22	—23
Electrotype	30	—31
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

MATERIALS NEWSFRONT

(Effective November 17, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	113.00 to 114.00
No. 2 bundles	71.00 to 72.00
No. 1 busheling	115.00 to 116.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	95.00 to 96.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	125.00 to 126.00
Scrap rails, random lgth.	115.00 to 116.00
RR specialties	116.00 to 117.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	91.00 to 92.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles (auto)	116.00 to 117.00
No. 2 dealer bundles	82.00 to 83.00
No. 1 busheling	104.00 to 105.00
Shredder scrap	109.00 to 110.00
Machine shop turn.	48.00 to 49.00
Mixed bor. and turn.	49.00 to 50.00
Shoveling turnings	52.00 to 53.00
Cast iron borings	70.00 to 71.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	123.00 to 124.00
No.1 RR hvy. melting	101.00 to 102.00
Scrap rails, random lgth.	110.00 to 111.00
Reroller rails	126.00 to 127.00
Rails, 2 ft. and under	134.00 to 135.00
RR couplers and knuckles	121.00 to 122.00
RR car axles	151.00 to 152.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	115.00 to 116.00
Stove plate	107.00 to 108.00
Steel car wheels	116.00 to 117.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	135.00 to 145.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	80.00 to 83.00
No. 1 dealer bundles	109.00 to 112.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	109.00 to 112.00
Shredder scrap	106.00 to 109.00
Machine shop turn.	37.00 to 40.00
Mixed bor. and turn.	37.00 to 40.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	122.00 to 125.00
Electric furnace bundles	117.00 to 120.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	122.00 to 125.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 84.00 to $ 85.00
No. 2 hvy. melting	83.00 to 83.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	51.00 to 52.00
No. 1 busheling	93.00 to 94.00
Drop forge flashings	82.00 to 83.00
Machine shop turn.	40.00 to 41.00
Mixed borings and turn.	31.00 to 32.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	68.00 to 69.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	90.00 to 91.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	70.00 to 71.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	32.00 to 33.00
Low phos. plate	105.00 to 106.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	95.00 to 96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	129.00 to 130.00
Low phos. punchings plate	129.00 to 130.00
Drop forge flashings	60.00 to 61.00
Foundry steel, 2 ft. & under	94.00 to 95.00
No. 1 RR hvy. melting	109.00 to 110.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	76.00 to 77.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	100.00 to 101.00
Stove plate	75.00 to 76.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	75.00 to 76.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 97.00 to $ 98.00
No. 2 heavy melting	92.00 to 93.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	75.00 to 76.00
No. 1 busheling	97.00 to 98.00
Shredder scrap	107.00 to 108.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	47.00 to 48.00
Cast iron borings	41.00 to 42.00
Electric furnace bundles	97.00 to 98.00
Elec. furnace, 3 ft. & under	87.00 to 88.00
Structural and plate, 2 ft.	117.00 to 118.00
Structural and plate, 4 ft.	104.00 to 105.00
No. 1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth.	104.00 to 105.00
Rails, 18 in. and under	122.00 to 123.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	82.00 to 83.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	58.00 to 59.00
No. 1 dealer bundles	87.00 to 88.00
No. 2 bundles	47.00 to 48.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	110.00 to 111.00
Rails, random length	115.00 to 116.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	35.00 to 36.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 59.00 to $ 60.00
No. 2 hvy. melting	53.00 to 54.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 72.00
No. 2 hvy. melting	63.00 to 65.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 bundles	[illegible] to 44.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	25.00 to 27.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	71.00 to 73.00
Heavy breakable cast	15.00 to 17.00

San Francisco

No. 1 hvy. melting	$ 92.00 to $ 94.00
No. 2 hvy. melting	82.00 to 84.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 dealer bundles	62.00 to 64.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	106.00 to 108.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	120.00 to 122.00
No. 1 cupola cast	112.00 to 114.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	107.00 to 109.00
Mixed yard cast	97.00 to 99.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 78.00
No. 2 heavy melting cut 2 ft. and under	66.00
No. 1 dealer bundles	78.00
No. 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd.	75.00
Bush. new fact. unprep'd.	64.00
Machine shop turn.	25.00
Short steel turn.	25.00
Mixed bor. and turn.	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	95.00 to 96.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Crushed turnings	53.00 to 54.00
Shredder scrap	102.00 to 103.00
Cut structural plate 2 ft. and under	128.00 to 129.00
Unstripped motor blocks	86.00 to 87.00
Cupola cast	105.00 to 106.00

STEEL PRICES

Codes identify Producers listed in the Key on page 104. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3(2)	$400.00
C6	$400.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$431.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	21.45

Structurals

Carbon, East	
B3(2)	19.90
U1	19.90
Midwest	
A7, N4	19.90
J3, C20	19.90
W8	19.90
I3, T10, U1	19.90
West	
C6	21.10
U1	19.40
B3	20.10
B3	20.60
South	
A8, C16, U1	18.90
T10	18.90
High-Strength, Low Alloy, East	
B3(2)	19.90
U1	19.90
Midwest	
N4	98.90
W8	19.90
J3	19.90
U1	19.90
I3	19.90
West	
U1, A7	19.40
B3	20.60
B3	21.10
South	
U1, C16	19.90
Wide Flange, Carbon, East	
B3	19.90
U1, A7	19.90
Midwest	
U1	19.90
N4	19.90
I3	19.90
West	
U1	19.40
C6	20.15
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	18.45
J3	18.45
Midwest	
D1	18.45
S1, J3	18.45
W3	18.45
N4, W5	18.45
U1	18.45
B3, G2, I3, I4, M2, R3, J3, G3	18.45
West	
K1	18.45
B3	21.75
South	
R3	18.45
Cold-Rolled, Carbon Max. 25%, East	
E4	26.10
R7, S10, B4	24.80
P15	24.80
S7	Cmp*
J3	Cmp*
U1	26.30
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	27.55
J3	Cmp*
T4	Cmp*
West	
U1	26.30
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	18.45
A7	18.45
S1	18.45
I3	18.45
West	
K1	17.35
South	
R3	18.95
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	27.55
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	22.70
G4	25.80
U1	22.70
I4	22.70
Alloy, Cold-Rolled, East	
C11, E4, M8	39.25
R7	32.75
B4	27.80
P15	32.10
J3	Cmp*
Midwest	
I4	39.40
U1	39.40
S1	35.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	18.45
J3	18.45
U1	18.45
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	18.45
S1, W5, D1	18.45
J3	18.45
I4	18.45
West	
U1	18.00
K1	18.95
South	
R3	18.45
Cold-Rolled, East, Class I	
B3(2), U1	21.90
J3	21.90
Midwest	
B3, I3, G3, R3, M2, U1(2)	21.90
G2, W3, M11	21.90
I4	22.00
J3, A7	21.90
S1, W5, D1	21.90
West	
U1	21.25
South	
R3	21.90
Galvanized (hot-dipped), East	
B3(2), J3	23.80
Midwest	
J3, D1	23.80
I3, W5, S1	23.80
U1, A7, R3, Y1	23.80
G2, W3, M11	23.80
West	
K1	24.30
South	
U1	23.80
R3	23.80
Enameling, Midwest	
M11	23.75
A7, I3, U1, J3	23.40
S1	23.40
Long Terne, Midwest	
W5	24.40
A7, U1	24.40
R3	24.40

*Composite pricing

Wire Rod

East	
B3(2)	19.10
U1	19.10
Midwest	
A7, N4	19.10
U1	19.10
K2	19.10
J3	19.10
West	
C6	19.10
B3	21.00
U1	18.85
South	
G7	19.10

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	**per base box**
B3	$23.31
U1	21.93
Midwest	
B3	$23.31
U1	21.93
J3	23.31
M11	21.93
W3	21.93
W5	23.31
West	
K1	$23.81
U1	22.43
South	
U1	$21.93
Double Reduced (55 lb.)	
Midwest	
M11	$18.32
B3, J3	18.25
U1	18.32
W3	18.32
W5	18.25
West	
K1	$18.75
U1	18.82
South	
U1	$18.32
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$20.60
Midwest	
J3	$20.60
M11	18.92
I3, U1, W5	20.60
W3	18.92
West	
K1	$20.60
U1	20.60
Double Reduced (55 lb.)	
East	
B3	$16.17
Midwest	
M11	$16.04
W5, U1	16.04
J3	15.50
W3	16.04
W5	16.17
West	
U1	$16.04
South	
U1	$16.04

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3(2)	21.75
T10	14.175
C6	20.60
U1	22.55
South	
A8	22.80
A7	22.80
C16	22.80
G7	14.10
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	27.65
C2	23.025
M9, W10, T11, S8	27.15
N1	24.475
R4	22.25
M1	23.025
B4, C10	27.25
Midwest	
B5, W10, L2, Y1, W8, R3	29.50
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	27.15
West	
B5	26.50
B5	29.50
B6	19.25
R3	30.45-33.40
South	
B5	16.80
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	22.85
Midwest	
A7, U1	22.85
I3, R3, C10, T11, W8	24.85
I4	22.85
J3	22.85
T11	30.60
West	
B3(2)	23.85
B5	18.50
C6	23.35
U1	25.35
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	31.15
T11, S8	30.60
C10	30.60
Midwest	
B5, R3, L2, C10	33.20
C2	28.275
J3, M9, W10	30.60
P3	22.75
B1	22.70
W8, N9	24.15
L2	29.40
West	
R3	34.55-36.60
B5	31.95
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	21.50
L4	21.50
P2	21.50
U1	21.50
J3	21.50
Midwest	
A7, B3, G3, J3, R3, G2, S1	21.50
I3, U1, W8, I4, W5	21.50
J3	21.50
West	
A7	21.50
U1	21.50
B3	21.50
C6	21.50
O2	20.35
K1	21.75
South	
R3	21.50
A7	21.50
U1	21.50
Alloy, East	
J3	29.30
P2, U1	29.30
B3(2), L4	29.30
Midwest	
W8	23.025
B3	29.30
G2, G3	29.30
I4, U1	29.30
West	
B3	29.30
O2	29.30
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	23.35
U1	22.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	22.65
J3	22.20
K2	21.60
South	
U1	22.65
A8	17.60
West	
C6	21.20

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co. Carnegie, Pa
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga
A11	Atlantic Wire Co., Branford, Conn
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa
B4	Blair Strip Steel Co., New Castle, Pa
B5	Bliss & Laughlin, Inc., Harvey, Ill
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa
C15	G O Carlson Inc, Thorndale, Pa
C16	Connors Steel Co., Birmingham, Ala
C20	Calumet Steel Div., Chicago Heights, Ill
C21	Cumberland Steel Co., Cumberland, Md
D1	Detroit Strip Div., Cyclops Corp
D2	Driver Wilber B. Co., Newark, N J
D3	Driver Harris Co., Harrison, N J
E3	Enamel Products & Plating Co., McKeesport, Pa
E4	Elliot Bros. Steel Co., New Castle, Pa
F1	Firth Sterling, Inc., McKeesport, Pa
G2	Granite City Steel Co., Granite City, Ill
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich
G4	Greer Steel Co., Dover, O
G5	Green River Steel Corp., Owensboro, Ky
G6	Gibraltar Steel Corp., Buffalo, N Y
G7	Georgetown Steel Corp., Georgetown, S C
G8	Guterl Special Steel Corp
H1	Hercules Drawn Steel Corp., Livonia, Mich
I2	Ingersoll Steel Div., New Castle, Ind
I3	Inland Steel Co., Chicago, Ill
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif
K1	Kaiser Steel Corp., Fontana, Calif
K2	Keystone Consolidated Industries, Inc
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N J
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp
M9	Moltrup Steel Products Co., Beaver Falls, Pa
M11	Midwest Steel Div., National Steel Corp., Portage, Ind
N1	Northeast Precision Steel Co., Boston, Mass
N4	Northwestern Steel & Wire Co., Sterling, Ill
N6	Northwest Steel Rolling Mills, Seattle, Wash
N9	Nelson Steel & Wire Co., Chicago, Ill
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore
P2	Phoenix Steel Corp., Claymont, Del
P3	Wyckoff Steel Div., Plymouth, Mich
P9	Pacific States Steel Co., Niles, Cal
P13	Penn Dixie Steel Corp., Kokomo, Ind
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N Y
R5	Roblin Steel Corp., Inc., North Tonawanda, N Y
R6	Rodney Metals, Inc., New Bedford, Mass
R7	Rome Strip Steel Co., Rome, N Y
S1	Sharon Steel Corp., Sharon, Pa
S7	Stanley Works, New Britain, Conn
S8	Superior Drawn Steel Co., Monaca, Pa
S10	Seneca Steel Service, Buffalo, N Y
S16	Southern Precision Steel Co., Gulfport, Miss
T4	Thomas Steel Strip Co., Warren, O
T5	Timken Company, Steel Division, Canton, O
T7	Texas Steel Co., Fort Worth, Tex
T9	Triumph Electro Corp., Chicago, Ill
T10	Tennessee Forging Steel Corp., Harriman, Tenn
T11	Teledyne Columbia-Summerill, Carnegie, Pa
U1	United States Steel Corp., Pittsburgh, Pa
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va
W5	Wheeling-Pittsburgh Steel Corp
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa
W14	Whittaker Steel Strip Div., Detroit, Mich

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		25.16	29.11	32.98	30.54	28.19	30.48	21.32	42.29	43.93	55.13	53.51	79.00
Baltimore		21.17	32.65	36.47	40.29	32.14	32.29	27.28	43.39	50.09	53.09	64.50	70.25
Birmingham		25.12	28.78	32.76	29.77	27.66	29.82	21.09	41.75	40.00	54.49	53.70	77.71
Boston		26.04	28.28	31.28	40.93	33.03	30.08	23.67	39.32	51.31	56.16	62.34	68.76
Buffalo		26.15	27.09	34.90	36.91	31.75	28.84	22.15	39.32	49.36	54.21	60.54	68.76
Chicago		22.16	25.73	28.45	30.27	27.07	26.69	22.67	37.43	46.32	46.41	52.64	58.44
Cincinnati		22.69	27.50	29.54	28.38	27.51	26.91	17.88	38.98	45.95	48.83	55.71	61.58
Cleveland		25.25	30.16	35.42	33.45	30.20	29.03	19.94	41.06	47.25	53.48	57.48	62.84
Denver		29.33	35.00	36.80	39.47	32.35	33.12	24.52	44.24	52.23	58.97	65.94	73.33
Detroit		22.82	28.12	29.15	31.08	27.27	27.07	16.93	39.92	45.13	49.07	57.78	63.69
Houston		21.21	25.40	27.66	40.03	31.65	33.87	26.16	45.58	53.39	59.05	66.90	73.12
Kansas City		19.64	24.46	27.18	30.77	28.72	28.48	21.36	39.84	46.11	52.18	58.51	64.97
Los Angeles		27.02	33.33	35.19	40.10	35.35	34.55	33.64	44.63	59.38	65.99	72.30	79.73
Memphis		26.90	31.04	33.87	33.44	29.80	33.70	22.85	41.38	48.18	55.05	59.92	75.37
Milwaukee		22.45	27.45	29.31	27.56	27.18	26.55	17.64	37.37	46.32	46.50	53.29	58.54
New York		25.15	27.57	30.95	42.58	30.29	28.69	23.98	44.90	50.95	56.22	64.93	71.11
Philadelphia		26.30	32.95	34.81	41.78	33.18	32.28	24.04	43.48	51.16	54.87	64.10	69.91
Pittsburgh		27.71	33.19	36.16	37.08	32.22	32.22	27.46	40.53	47.38	53.50	59.46	67.69
Portland		28.48	25.98	36.72	37.43	29.54	33.25	31.86	52.41	57.23	61.12	58.00	......
San Francisco		29.77	34.96	37.03	42.99	36.96	37.32	35.82	47.71	59.37	65.96	72.24	79.49
Seattle		28.22	32.61	35.15	39.85	31.32	35.88	36.49	47.82	59.30	65.62	71.87	79.43
Spokane		21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	......	58.32
St. Louis		21.73	26.13	28.51	33.85	28.14	27.35	19.64	38.31	42.97	47.73	54.92	61.22
St. Paul		22.32	25.41	24.79	31.44	29.13	28.12	18.59	38.93	42.86	48.55	55.64	61.92

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛ x 1 , Plate ¼ x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2 15/16; Cold finished bar—C 1018—1 rounds; Alloy bar—Hot-rolled 8620—1⅝ round; Cold drawn—1 round; Hot-rolled 4140—1⅝ round. Cold drawn—1 round. Check local supplier for additions or deductions from base.

Prices at all points include metropolitan delivery charges.

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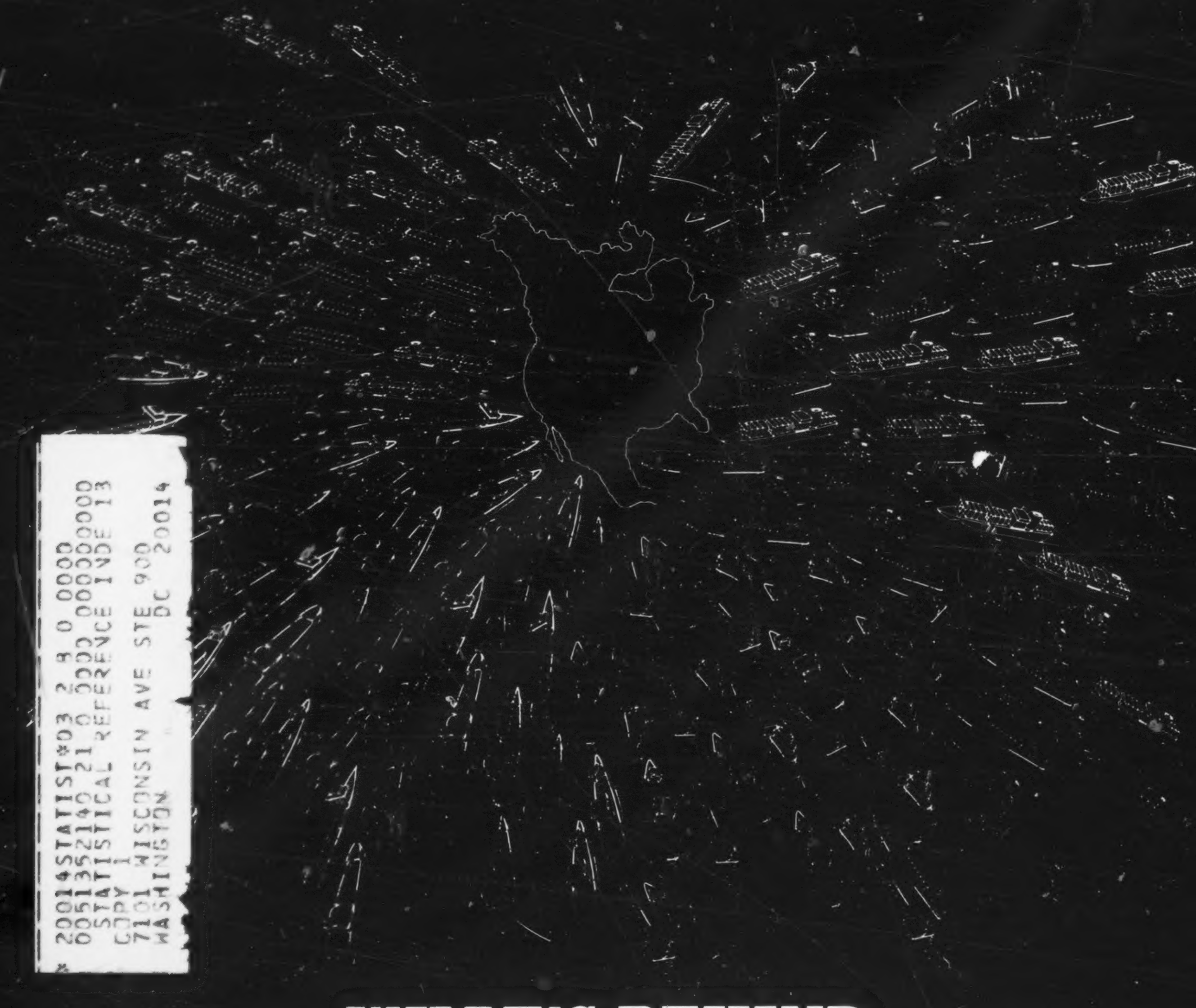
IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

DECEMBER 17, 1980



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WHAT'S BEHIND THE FOREIGN IMPORT SURGE?

ENERGY MANAGERS: THE NEW KID ON THE BLOCK

TRY MANAGING A CUTTING FLUID

NOW'S THE TIME TO DRAFT INDUCTION HEATING

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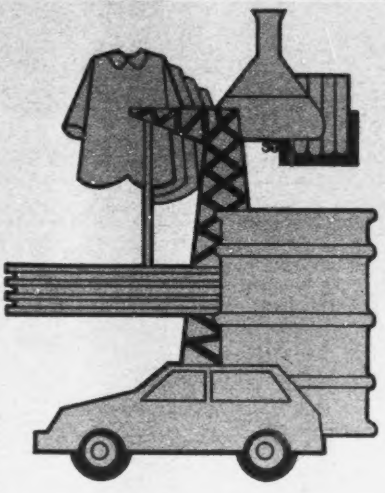
IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089



Where Imports Hit Hardest

Fifty-nine Percent of 1979 Imports were in the Following Product Areas:

Commodity	1979	1978	1977
Oil	$56.0 billion	$39.1 billion	$42.1 billion
Auto	25.2 "	20.6 "	15.8 "
Chemicals	7.5 "	6.4 "	5.4 "
Steel	6.7 "	6.7 "	5.3 "
Nonferrous Metals	6.3 "	5.1 "	3.4 "
Clothing	5.9 "	5.7 "	4.2 "
Coffee	3.8 "	3.7 "	3.9 "
Power Generators	3.5 "	—	—
Paper	3.4 "	2.9 "	2.4 "
Lumber	2.9 "	2.7 "	2.1 "

Source: U.S. Commerce Department

THE SURGE IN IMPORTS STILL TROUBLES MANY U.S. MANUFACTURERS

By George J. McManus

When domestic companies first started complaining about imports, one of the stock answers was that only crude products and backward industries were affected.

A few of the backward industries might suffer, it was argued, but the U.S. would continue to thrive in high technology markets served by progressive companies. If the backward few were protected, their high prices would be passed on to customers and ultimately the consumer.

Since those early days, imports have moved into domestic markets for radios, TV sets, autos, electrical equipment, fasteners, valves, bearings, machine tools, chemicals and others.

Despite this trend, the old themes survive. They surfaced recently when problems of the steel industry were being debated in Washington. A memo credited to a high Administration official suggested writing off steel as a "lemon" industry in which the U.S. "no longer has a competitive advantage."

Steel and autos are not the only U.S. industries battling an ever-rising tide of foreign goods in their home markets.

The idea that losses to imports can be equated with competitive deficiencies doesn't seem to fit the facts. This was brought out recently when the Commerce Dept. ranked different industries according to economic performance. There were three classifications: winners, losers, and middle of the road.

The top winner was the chemical industry. In 1979, imports of chemicals came to $7.5 billion. That was the third highest import total, topped only by automotive and oil. It was well above the $6.7 billion in steel imports.

The auto industry was also called a winner by the Commerce Dept. Auto imports came to over $25 billion last year. Ford Motor Co. and United Auto Workers recently asked the International Trade Commission (ITC) to curb imports from Japan.

"The whole industry is awash in red ink," said Philip Caldwell, chairman of Ford. "GM, Ford, and Chrysler each lost $1.5 billion before taxes in the first nine months," said Mr. Caldwell after ITC had ruled that imports were not a prime cause of injury.

The chemical and auto examples suggest there is no correlation between the import pattern and the relative performances of domestic industries. The explanation could be that all U.S. industry—including the winners—has fallen behind in the world race and that import penetrations are entirely a matter of foreign selection.

In this connection, much has been made of the productivity lag of the U.S. and the productivity gains abroad. There is very little information on productivity levels and cost levels in different countries. One of the few comprehensive studies was made by Texas Instruments Inc.

"Despite the recent low levels of productivity increase in the U.S.," said Mark Shepherd, chairman of Texas Instruments, "the strong performance of the U.S. economy historically has enabled it to achieve high absolute levels of productivity compared to other countries."

The study by Mr. Shepherd's company showed that U.S. manufacturers are not only the most efficient in the world but they have the lowest costs. High wages here are offset by greater productivity.

A surprising finding of Texas Instruments was that Japan has much lower productivity than the U.S. and somewhat higher unit costs. The American cost position has actually improved in relation to Japan. In 1970, Japanese unit labor costs were 40 pct lower than U.S. costs. By 1978, rising wages had lifted Japan a little over the U.S. cost level.

In considering these numbers, it's worth noting that Texas Instruments operates plants in Japan and Europe as well as in Singapore, Taipei, South America and others. It's also worth noting, incidentally, that the U.S. research effort is still relatively strong. According to a Senate report, Japan's research spending in 1977 was still a smaller percentage of national output than U.S. spending.

None of this is grounds for complacency. Foreign nations are gaining in the productivity race. But it can't really be said that import penetrations so far are based on low productivity in the U.S.

It is likewise difficult to explain the import mix on the basis of product sophistication. It is certainly not true that we are taking in only crude products and shipping out advanced products. A study of trade with Japan showed a trend in the opposite direction.

"The data seem to indicate that we are a developing nation supplying a more advanced nation," read a September report of the House Subcommittee on Trade. "We are Japan's plantation: haulers of wood and growers of crops in exchange for high technology, value added products."

The House report pointed to more of the same. "Last year, the Japanese captured the most advanced part of the (semiconductor) market, the 16K RAM. This places them in an excellent position to capture the profits from this high technology product and to compete better in the next generation product."

Japan's progress in robots, machine tools and aircraft was detailed in the study. No study was needed to show Japanese advances in auto manufacture.

In the auto case, one of the arguments against trade curbs was that consumers would be deprived of fuel-efficient foreign cars. This comes up in most cases where one industry is complaining about imports. Protecting an inefficient industry supposedly will penalize the rest of the economy.

That sounds plausible, but it implies, again, that trade problems are confined to a few isolated pockets. Most consumers supposedly live and work in a world removed from these pockets. The unfortunate truth is that many consumers are in no position to benefit from import bargains.

"One out of four of the domestic industry's workers is still on layoff," says Mr. Caldwell of Ford. The United Auto Workers predicted there would be 250,000 permanent job losses if something wasn't done about car imports.

Among those recently certified for trade adjustment assistance were workers who formerly made umbrella handles, glass laminates, cedar shingles, leather coats and women's shoes. In the same reporting period, another 80 trade claims were denied.

The auto people point out that any apparent savings from imports must be balanced against the losses due to unemployment. "You're paying $1.5 billion in trade benefits," says Susan Shackson, director of industry-government legislative affairs for Ford Motor. "You have $1.3 billion in lost taxes."

German Workers Fare the Best

Relative Levels of Absolute Hourly Compensation in Manufacturing
(U.S. Value = 100)

	U.S.	Germany	France	U.K.	Italy	Japan
1970	100.0	46.8	41.8	33.5	42.4	22.6
1971	100.0	52.3	44.0	36.8	46.6	25.2
1972	100.0	60.5	50.8	40.1	53.7	31.5
1973	100.0	77.2	61.9	40.7	63.6	40.0
1974	100.0	83.0	62.3	44.1	64.4	44.4
1975	100.0	88.1	74.9	48.6	74.0	45.7
1976	100.0	85.2	71.0	42.7	64.3	45.7
1977	100.0	93.3	72.8	41.8	66.2	50.4
1978	100.0	107.0	82.7	48.8	72.4	62.8

U.S. Leads in Productivity

Relative Levels of Absolute Productivity in Manufacturing
U.S. Value = 100

	U.S.	Germany	France	U.K.	Italy	Japan
1970	100.0	48.0	51.6	29.8	32.5	35.8
1971	100.0	50.3	51.0	31.6	32.1	34.4
1972	100.0	54.9	57.1	33.7	34.8	39.7
1973	100.0	65.9	69.5	33.1	40.0	50.7
1974	100.0	72.6	75.7	34.3	48.9	53.5
1975	100.0	70.6	70.6	33.3	43.2	44.1
1976	100.0	69.3	67.7	29.8	41.4	45.5
1977	100.0	74.4	66.6	31.2	42.1	48.9
1978	100.0	83.2	73.4	35.3	44.9	61.3

U.S. Labor Costs Are Low

Relative Levels of Absolute Unit Labor Costs in Manufacruring

Source: Texas Instruments Incorporated

U.S. Value = 100

	U.S.	Germany	France	U.K.	Italy	Japan
1970	100.0	97.5	80.9	112.4	130.4	63.0
1971	100.0	103.9	86.2	116.3	145.5	73.4
1972	100.0	110.2	88.9	119.0	154.0	79.3
1973	100.0	117.1	89.0	123.1	159.1	79.0
1974	100.0	114.5	82.3	128.5	131.7	82.9
1975	100.0	124.8	106.0	145.8	171.1	103.7
1976	100.0	123.0	105.0	143.3	155.3	100.4
1977	100.0	125.4	109.4	133.9	157.3	103.0
1978	100.0	128.6	112.7	138.1	161.2	102.6

Where U.S. Imports Are Going

Value in Millions of Dollars; Quantity, in Parentheses, as Specified

Commodity	1973	1976	1979
Chemicals	2,463	4,772	7,485
Machinery and Transport Equipment	21,076	29,824	53,678
Machinery, total	10,150	15,446	28,530
Office machines, total	915	1,341	2,500
Calculators	283	272	303
Metalworking machinery, total	189	362	1,123
Machine tools	170	315	1,029
Pumps and centrifuges	250	411	932
Ball and roller bearings	183	191	408
Power machinery and switchgear	461	758	1,708
Equipment for distributing electricity	142	185	364
TV receivers	541	833	1,085
(thousands)	(6,542)	(7,924)	(19,813)
Transistor radios	552	632	657
(millions)	(45)	(41)	(33)
Electric household appliances	280	417	771
Automobiles and parts, total	9,252	13,104	22,053
Motorcycles	571	485	908
(Thousands)	(1,197)	(739)	(1,012)
Aircraft and parts, total	563	434	1,078
Other Manufactured Goods	21,461	30,180	51,071
Metals and manufactures, total	6,913	9,899	17,457
Manufactures of metal, n.e.s., total	1,431	2,051	3,671

Source: Commerce Department

Balance Tips in Favor of Japan

Millions of Dollars

Exports to Japan	
Soy beans	$1,160
Maize, used as material for fodder and feeds	1,025
Sawlogs and veneer logs, of Douglas fir	827
Sawlogs and veneer logs, of hemlock	721
Coking coal	665
Wheat	529
Cotton	494
Turbojet aeroplanes	420
Rawhide and skins	383
Waste and scrap metal	338
Imports from Japan	
Passenger motor vehicles	$6,790
Iron or steel plates and sheets	1,098
Road motor vehicle and tractor chassis	1,045
Radio receivers	830
Motorcycles	825
Audio and video tape players	758
Iron or steel pipes	732
Still cameras and parts	509
Parts NSPF of motor vehicles and handling equip.	397
Nails, screws, and other fasteners	375

Source: International Trade Commission (ITC)

So far these arguments have had little effect on fuel-conscious auto buyers. Domestic auto companies were admittedly caught flat-footed by the swing to small cars. In addition to this real problem, U.S. companies are fighting consumer beliefs that haven't caught up with current reality.

"With respect to fuel efficiency," says Susan Shackson, "the gap is small." The American fleet now averages only two miles a gallon under imported cars, she says.

She acknowledges the Japanese have developed efficient plant systems. "We would have to admit there is probably some productivity difference," she says. "There is a wage rate difference of $7 or $8 an hour."

The auto industry's problems have been too conspicuous to be ignored. Less visible are equally serious problems in a number of smaller industries. Among those hard hit by imports are manufacturers of bearings.

"Imports now supply over 15 pct in dollars of domestic consumption and 52 pct in unit of ball bearings," says W. E. DeCaulp, division general counsel, Fafnir Bearing.

"The bearings industry is an exceedingly high technology industry," says Mr. DeCaulp. "The domestic industry has been a world leader."

Domestic valve makers watched imports triple from 1975 to 1979 while their own sales rose by a factor of 1.5. Technology had nothing to do with this, says J. O. Hendrickson, president of the Valve Manufacturers Assn.

"We make valves for all the nuclear plants," says Mr. Hendrickson, "You know what technology is involved there. We're very progressive."

The machine tool industry experienced a trade deficit in 1978 for the first time. Fifty percent of the fasteners consumed in the U.S. in the second quarter of 1980 were imported. Officials in both industries vigorously reject charges of inefficiency.

The most common domestic explanation for the import profile goes something like this: Foreign producers have zeroed in on standard, high volume product areas, frequently gaining footholds during domestic shortages. Foreign positions have been maintained and expanded in weak markets by low prices. The prices have been based on foreign government backing.

One effect of the foreign gains is the subtraction of domestic capacity. The dependence created is a cause of continuing imports.

In the bearings industry, direct losses are attributed to the foreign concentration on standard items. "They move into these markets with low prices, eventually forcing U.S. producers to abandon production," says Mr. DeCaulp of Fafnir.

He cites the case of a Japanese supplier who has had half his volume in just six bearing sizes. The volume business is the profitable business. Domestic suppliers are left with the specialty business, which requires high technical input and yields relatively low profits.

"The erosion of our high volume base threatens our research and development efforts," says Mr. DeCaulp. It can also threaten the existence of a domestic company. "In 1973, at least nine U.S. producers were offering the 203 ball bearing. By 1980, only one automated line in the United States still produced it."

Some years ago, the Timken Co. filed dumping charges against Japanese producers of tapered roller bearings. The charges were upheld, but no dumping duties were ever collected.

Apart from direct losses to foreign suppliers, the bearings industry has been hurt by a flanking action. "Thirty-two percent of all U.S. bearings are incorporated in automobiles," says Mr. DeCaulp. Every car imported means 50 bearings not made by U.S. companies, he notes.

Another aspect of indirect import competition is in the electric motor field. Japanese motors have taken over 8 to 14 pct of the domestic motor market. By itself, this penetration brings a certain number of bearings in. It also creates pressure for direct imports of foreign bearings.

"Our customers, who must compete with low-priced Japanese motors; must lower their costs to meet competition," says Mr. DeCaulp. "To do so, they have increasingly been forced to purchase Japanese-built bearings."

As a result, Japanese bearings are now going into 32 pct of the domestic small motors and 4 pct of the large motors.

At the other end of the supply chain, domestic fastener companies rely to some extent on imported steel rod. In one case, the price of rod from Japan worked out to $8.07 for 100 hex cap screws. The total cost of a domestic company was $19.82 per 100. The price offered for the same quantity of imported cap screws was $4.92.

The fastener market is in the advanced stage of the same sequence that has operated for imported bearings. "Initially, they concentrated on the standards—the lowest strength levels," says C. J. Wilson, secretary-treasurer, Industrial Fasteners Institute. "The imports literally wiped out the wood screws business.

There has been a progression into the higher fastener grades. In the second quarter of 1980, imported fasteners accounted for 50 pct of total U.S. consumption. In line with this, employment in one segment of the domestic industry has fallen from 22,000 five years ago to 12,000 today.

The domestic fastener people say no amount of modernization or efficiency would help stem the foreign tide. "There's no machine we could invent that would enable us to produce at the cost of our raw material," says Mr. Wilson.

The problem, he says, is government involvement in the Japanese fastener industry and a different philosophy. "Their government pays people to stay at work. We pay ours to stay home."

A 15 pct tariff was applied to imported fasteners in 1979. Thus runs through December of 1981. Currency changes have had the effect of wiping out the tariff, says Mr. Wilson.

The import profile in valve markets resembles that of bearings and valves. Foreign suppliers have hit "where they see a massive opportunity with repetitive business," says M. R. Beschloss, president of Condec-Flow Control Group.

The low pressure steel valves for hydrocarbon applications have been big import targets, says Mr. Beschloss. The foreign share has gone from 10 pct of the market a few years ago to nearly 40 pct now.

Corresponding with this has been a 30 pct reduction in the capacity of domestic valve companies. Mr. Beschloss warns that this loss will be critical when the U.S. energy program moves into high gear.

The domestic fastener people say no amount of modernization would help stem the foreign tide.

Foreign valve companies got a foot in the American market when shortages developed during the 1973-1974 boom. When demand receded says Mr. Beschloss, the foreign share was maintained and expanded by cutting prices well below the domestic level.

The valve people say the low foreign prices reflect government subsidies and government social policies abroad. In 1979, the Valve Manufacturers Assn. sought to have countervailing duties applied to valve imports.

"We had a very good case," says Mr. Beschloss. "We gave up the ghost because the burden of proof was such there was no way we could win."

To establish injury, the valve companies would have had to go through a costly documentation procedure. This would have been burdensome for an industry made up mostly of small companies. And it probably would have been futile.

"We felt we were working against a stacked deck," says Mr. Beschloss. He charges the U.S. government with "total insensitivity to the needs of domestic manufacturers."

A meeting of the Valve Manufacturers Institute was addressed by Jack Lowe, managing director of Great Britain's IMI Valves International, Ltd. "I thank God for the United States government," said Mr. Lowe, "for it's clear that it is on my side and not yours." He added that he was confident of his company's ability to compete on a fair basis.

Machine tool exports last year were a little under $650 million. Imports were over $1 billion. In the first six months of 1980, machine tool imports exceeded exports by $251 million. It's too soon to say these numbers represent a permanent swing.

"A lot of the National Machine Tool Builders Assn. people were capacity limited," says M. D. Verson, chairman of Verson Allsteel Press Co. "That's disappearing."

In the press field, says Mr. Verson, imports have been of two types: the very large units, which are made by only a few companies throughout the world; and the small units, which are sold on the basis of price.

"We can compete with imports," he says. "I'm worried about our ability to compete in third markets." In these markets, he says, foreign builders are backed by government subsidies and general support.

The big paradox in the whole trade picture is that while imports have been surging into U.S. markets, American manufacturers have been competing very effectively for export business. Some of the industries hardest hit by imports are among those successful in the world market.

The valve industry, for example, exports 15 pct of its output. Though licensees and affiliates, the U.S. industry supplies nearly 40 pct of the world's valves.

"The valves exported are specialty valves that aren't made abroad," says Mr. Beschloss.

Nevertheless, the export side of the trade coin is large and significant. In 1979, the U.S. had a surplus of $31.8 billion in non-oil trade. That was up $20.7 billion from 1978. A large part of the increase was accounted for by a $9.8 billion rise in the surplus in manufactured goods.

In the first nine months of 1980, exports of non-agricultural products rose 23 pct. Exports of industrial supplies, including coal, were up $12.8 billion. Exports of machinery rose $10.3 billion.

These numbers help explain why the U.S. government has been so cautious in its handling of dumping complaints and subsidy charges. ☐

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METALWORKING PRICE TRENDS

Still no sign of a price break as year nears end

The only certain point that emerges from October data on producer prices is that double-digit inflation is still very much present. Too, there are no hopeful signs to be read into October price data that shows inflation is cooling.

Producer finished goods price rose by .8 pct in October. But to some extent, that was a fluke on the low side. The figure was low because in September prices were depicted as sliding by .2 pct. And that September 'decline' was due mostly to the Labor Dept. weighing in manufacturers' rebates to auto dealers as price 'reductions.'

That handling of rebates was a first-time one in determining published price data for any month. That means it broke a trend pattern and made any month-to-month comparisons a bit questionable.

Also, while price actually charged by auto dealers rose sharply in October, the Labor Dept. deducted a 'quality improvement' factor that statistically made prices appear much lower.

After allowing for the statistical juggling in September and October, it is certain that double-digit inflation still rages. Producer prices for finished goods in October—even with the recent juggling—were up 12.3 pct from the year-ago period. And prices of crude materials, where less statistical hanky-pank goes on, were up by more than 16 pct.

If the latest month-to-month price data for metalworking lines is projected to an annual rate, then it can be said that 14 of the 23 product lines on the table were at the double-digit level in October.

A timely question: Will durable goods prices show a fresh upward push in the months ahead?

"After all," says one materials handling industry executive, "if prices were going up when business was slow, what will they do when business is strong? And don't forget, there is no let-up on cost increases."

It's a question on the minds of many metalworking industry executives these days. Notes one executive somewhat glibly, "unfortunately, there are no firm answers. There are only firm prices."

Latest Month Covered: October, 1980

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	325.7	+ 1.2	+15.8
Metal Forming Machine Tools	356.3	+ .3	+15.4
Agricultural Machinery & Equip	262.8	+ .1	+ 9.5
Construction Machinery & Equip	298.4	+ 1.2	+13.1
Special Industry Mach. & Equip	286.2	+ 1.1	+12.8
Industrial Process Furnace & Ovens	301.8	+ 1.1	+12.1
Industrial Material Handling Equip	259.2	+ 1.2	+ 8.9
Pumps, Compressors & Allied Equip	296.4	+ 1.6	+15.7
Fluid Power Equip	206.5	+ 2.1	+14.7
Mechanical Power Transmission Equip	272.2	+ 1.6	+12.7
Automobiles	198.0	+ 8.2	+ 9.3
Motor Trucks	247.9	+ 8.9	+13.2
Railroad Equipment	323.3	+ 1.0	+12.9
Fabricated Metal Structural Products	276.2	+ .9	+ 7.8
Electric Motors	254.9	+ .2	+ 6.8
Valves & Fittings	293.4	+ .7	+10.8
Ball & Roller Bearings	278.3	+ .9	+19.3
Plain Bearings	270.7	+ 1.2	+ 8.8
Cutting Tools & Accessories	238.6	+ .1	+12.2
Heating Equipment	210.0	+ .6	+ 9.3
Plumbing Fixtures & Brass Fittings	250.6	NC	+12.1
Metal Containers	304.4	+ .4	+ 8.8
Miscellaneous Metal Products	257.1	+ .5	+ 7.8

Data based on U.S. Labor Dept.'s Producer Price Index

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	261	255	242	280
Buffalo	46	47	43	51
Pittsburgh	434	428	379	398
Youngstown	103	106	108	133
Cleveland	153	149	113	142
Detroit	168	192	166	175
Chicago	654	651	584	558
Cincinnati	89	90	90	92
St. Louis	98	97	72	71
Southern	234	236	224	252
Western	133	140	125	166
U.S. Production	2,373	2,391	2,146	2,318

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢ —Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective December 1, 1980).

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,373	2,391	100,545	125,516
Capability Utilization Rate	80.4	81.0	71.7	88.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 12/1/80)	22.286	22.286	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$101.83	$ 99.83	$ 97.17	$ 92.83
No. 2 bundles	$ 74.50	$ 74.50	$ 72.17	$ 60.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$105.50	$102.50	$ 94.50
No. 1 steel, Philadelphia	96.50	91.50	91.50	91.50
No. 1 steel, Chicago	103.50	102.50	97.50	92.50
No. 1 bundles, Detroit	101.50	101.50	93.50	89.50
Low Phos., Youngstown	110.50	105.50	105.50	101.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	127.50	127.50	124.50	147.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective December 1, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	12/1/80
Copper (C)	93.10-94.00	93.55-96.00	11/24/80
Lead	39.00-43.00	43.00	12/1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/1/80

ALUMINUM: 99.5% ingot. COPPER (C): cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt 99%, 250 kg	$25.00
Gold per troy oz	$635.30
Indium, 99.9%, per troy oz	$12.25-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$405-$410
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$225
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$18.85
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Nov. 24—685.26
Nov. 25—672.27
Nov. 26—674.14
Nov. 27—678.29
Nov. 28—671.41

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	$88\frac{5}{8}$	$79\frac{3}{8}$
Yellow brass	$71\frac{7}{8}$	$66\frac{3}{4}$
Red brass	$79\frac{3}{4}$	$73\frac{3}{8}$
Comm. bronze	$82\frac{3}{8}$	$75\frac{3}{8}$
Mang. bronze	$70\frac{1}{8}$	$68\frac{3}{8}$
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	84
No. 2 copper wire	71
Light copper	62

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	80
No. 2 copper wire	67
Light copper	58
No. 1 composition	74
No. 1 comp. turnings	73
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	34
Radiators	55
Aluminum	
New mixed clips	40 —41
Old sheet	38 —39
Old cast	38 —39
Clean dry borings	39 —40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum	
Segregated clippings	45 —46
Mixed L.C. clips	35 —36
Old sheets and cast	28 —29
Boring and turnings	24 —25
Duraluminum clippings	38 —39
Copper and Brass	
No. 1 copper wire	74 —75
No. 2 copper wire	63 —64
Light copper	59 —60
Radiators	48 —49
No. 1 composition	63 —64
No. 1 composition turn'gs	60 —61
Cocks and faucets	45 —46
Clean heavy yellow brass	39 —40
Brass pipe	45 —46
New soft brass clippings	54 —55
Yellow brass rod ends	46 —47
Lead	
Heavy soft lead	20 —21
Whole batteries	9 —10
Type metal	21 —22
Electrotype	29 —30
Nickel	
Nickel solids	175 —190
Nickel rod ends	175 —190
Nickel sheets, clips	175 —190
Nickel turnings	130 —135
Zinc	
New zinc clippings	19 —20
Old diecast zinc	12 — 13

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(Effective December 1, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	71.00 to 72.00
No. 1 busheling	115.00 to 116.00
Machine shop turn	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	95.00 to 96.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth	116.00 to 117.00
RR specialties	121.00 to 122.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$103.00 to $104.00
No. 2 hvy. melting	96.00 to 97.00
No. 1 dealer bundles	117.00 to 118.00
No. 1 factory bundles (auto)	122.00 to 123.00
No. 2 dealer bundles	87.00 to 88.00
No. 1 busheling	107.00 to 108.00
Shredder scrap	114.00 to 115.00
Machine shop turn	50.00 to 51.00
Mixed bor. and turn	51.00 to 52.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	73.00 to 74.00
Low phos. forge crop	124.00 to 125.00
Low. phos. punchings plate ¼ in. and heavier	130.00 to 131.00
Low phos. 2 ft. and under	126.00 to 127.00
No.1 RR hvy. melting	106.00 to 107.00
Scrap rails, random lgth	114.00 to 115.00
Reroller rails	131.00 to 132.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	126.00 to 127.00
RR car axles	156.00 to 157.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	118.00 to 119.00
Stove plate	109.00 to 110.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	135.00 to 145.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	85.00 to 88.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	111.00 to 114.00
Shredder scrap	107.00 to 110.00
Machine shop turn	38.00 to 41.00
Mixed bor. and turn	38.00 to 41.00
Shoveling turnings	57.00 to 60.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	122.00 to 125.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	122.00 to 125.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars.

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	98.00 to 99.00
Drop forge flashings	84.00 to 85.00
Machine shop turn	40.00 to 41.00
Mixed borings and turn	31.00 to 32.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	68.00 to 69.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	90.00 to 91.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	104.00 to 105.00
No. 2 dealer bundles	75.00 to 76.00
Machine shop turnings	23.00 to 24.00
Shoveling turnings	37.00 to 38.00
Low phos. plate	110.00 to 111.00
Electric furnace bundles	110.00 to 111.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	97.00 to 98.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	43.00 to 44.00
No. 1 busheling	98.00 to 99.00
Machine shop turn	17.00 to 18.00
Mixed bor. and turn	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	134.00 to 135.00
Low phos. punchings plate	134.00 to 135.00
Drop forge flashings	65.00 to 66.00
Foundry steel, 2 ft. & under	99.00 to 100.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	139.00 to 140.00
Rails, 18 in. and under	140.00 to 141.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn	12.00 to 13.00
Mixed bor. and turn	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	78.00 to 79.00
Machine shop turn	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	98.00 to 99.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$102.00 to $103.00
No. 2 heavy melting	94.00 to 95.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	107.00 to 108.00
Machine shop turn	37.00 to 38.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	102.00 to 103.00
Elec. furnace, 3 ft. & under	92.00 to 93.00
Structural and plate, 2 ft.	117.00 to 118.00
Structural and plate, 4 ft.	105.00 to 106.00
No. 1 RR hvy. melting	99.00 to 100.00
Scrap rails, random lgth	106.00 to 107.00
Rails, 18 in. and under	124.00 to 125.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	84.00 to 85.00

Cincinnati

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 79.00 to $ 80.00
No. 2 hvy. melting	73.00 to 74.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	50.00 to 51.00
Machine shop turn	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	120.00 to 121.00
Rails, random length	109.00 to 110.00
Rails, 2 ft. and under	125.00 to 126.00
No. 1 cupola cast	81.00 to 82.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 58.00 to $ 60.00
No. 2 hvy. melting	52.00 to 54.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn	7.00 to 8.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 73.00 to $ 75.00
No. 2 hvy. melting	65.00 to 67.00
No. 1 dealer bundles	81.00 to 83.00
No. 2 bundles	44.00 to 46.00
No. 1 busheling	81.00 to 83.00
Shredder scrap	86.00 to 88.00
Machine shop turn	10.00 to 12.00
Shoveling turnings	26.00 to 29.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	73.00 to 75.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 93.00 to $ 95.00
No. 2 hvy. melting	83.00 to 85.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 dealer bundles	63.00 to 65.00
Machine shop turn	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	108.00 to 110.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to 124.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 heavy melting	$ 78.00
No. 2 heavy melting cut 2 ft. and under	66.00
No. 1 dealer bundles	78.00
No. 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd	75.00
Bush. new fact. unprep'd	64.00
Machine shop turn	25.00
Short steel turn.	25.00
Mixed bor. and turn	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	100.00 to 101.00
No. 2 bundles	58.00 to 59.00
Machine shop turn	19.00 to 20.00
Crushed turnings	56.00 to 57.00
Shredder scrap	107.00 to 108.00
Cut structural plate 2 ft. and under	133.00 to 134.00
Unstripped motor blocks	90.00 to 91.00
Cupola cast	109.00 to 110.00

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	255	245	226	283
Buffalo	47	45	42	67
Pittsburgh	428	420	362	416
Youngstown	106	113	100	138
Cleveland	149	129	120	155
Detroit	192	180	179	174
Chicago	651	623	595	564
Cincinnati	90	97	91	98
St. Louis	97	99	70	91
Southern	236	232	226	240
Western	140	136	132	159
U.S. Production	2,391	2,319	2,143	2,385

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 30¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66°
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

° 73.66¢—Cleveland-Cliffs as of 2/15/80. Hanna as of 1/31/80. Oglebay Norton as of 2/11/80. 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective November 24, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,391	2,319	98,172	123,244
Capability Utilization Rate	81.0	78.5	71.5	88.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base° (¢/lb.—eff. 12/1/80)	22.286	22.286	22.019	20.547
Pig Iron°° (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.°°° (Gross ton = 2240 lbs.)	$ 99.83	$ 98.17	$ 95.50	$ 92.50
No. 2 bundles	$ 74.50	$ 72.83	$ 70.50	$ 58.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$105.50	$102.50	$ 94.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	88.50
No. 1 steel, Chicago	102.50	97.50	92.50	94.50
No. 1 bundles, Detroit	101.50	96.50	93.50	88.50
Low Phos., Youngstown	105.50	105.50	105.50	101.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	127.50	124.50	121.50	148.50

° Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

°° Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points withpme U.S.

°°° Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective November 24, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	95.25-99.00	94.00-97.00	11/24/80
Lead	43.00-45.00	45.00	11/11/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	39.50-39.75	37.75-39.50	10/29/80

ALUMINUM: 99.5% Ingot. COPPER (C) – cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$634.75
Indium, 99.9%, per troy oz	$12.25-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$405-$410
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$225
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$19.35
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Nov. 17—694.18
Nov. 18—694.93
Nov. 19—695.49
Nov. 20—698.28
Nov. 21—696.62

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	90¾	81½
Yellow brass	74	68⅞
Red brass	82	75½
Comm. bronze	84½	77½
Mang. bronze	72¼	70½
Free cutting rod ends	62	62

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	85
No. 2 copper wire	73
Light copper	64

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	69
Light copper	60
No. 1 composition	74
No. 1 comp. turnings	73
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	34
Radiators	55

Aluminum

New mixed clips	40	—41
Old sheet	38	—39
Old cast	38	—39
Clean dry borings	39	—40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	46	—47
Mixed L.C. clips	36	—37
Old sheets and cast	29	—30
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	76	—77
No. 2 copper wire	65	—66
Light copper	60	—61
Radiators	49	—50
No. 1 composition	64	—65
No. 1 composition turn'gs	61	—62
Cocks and faucets	46	—47
Clean heavy yellow brass	40	—41
Brass pipe	46	—47
New soft brass clippings	54	—55
Yellow brass rod ends	46	—47

Lead

Heavy soft lead	21	—22
Whole batteries	10	—11
Type metal	22	—23
Electrotype	30	—31

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE NOV. 24, 1980

MATERIALS NEWSFRONT

(Effective November 24, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	71.00 to 72.00
No. 1 busheling	115.00 to 116.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	95.00 to 96.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	116.00 to 117.00
RR specialties	121.00 to 122.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	96.00 to 97.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	122.00 to 123.00
No. 2 dealer bundles	87.00 to 88.00
No. 1 busheling	106.00 to 107.00
Shredder scrap	114.00 to 115.00
Machine shop turn.	48.00 to 49.00
Mixed bor. and turn.	49.00 to 50.00
Shoveling turnings	52.00 to 53.00
Cast iron borings	73.00 to 74.00
Low phos. forge crop	124.00 to 125.00
Low. phos. punchings plate ¼ in. and heavier	130.00 to 131.00
Low phos. 2 ft. and under	126.00 to 127.00
No.1 RR hvy. melting	106.00 to 107.00
Scrap rails, random lgth.	114.00 to 115.00
Reroller rails	131.00 to 132.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	126.00 to 127.00
RR car axles	156.00 to 157.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	118.00 to 119.00
Stove plate	109.00 to 110.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	135.00 to 145.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	80.00 to 83.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	111.00 to 114.00
Shredder scrap	107.00 to 110.00
Machine shop turn.	37.00 to 40.00
Mixed bor. and turn.	37.00 to 40.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	122.00 to 125.00
Electric furnace bundles	117.00 to 120.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	122.00 to 125.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	98.00 to 99.00
Drop forge flashings	84.00 to 85.00
Machine shop turn.	40.00 to 41.00
Mixed borings and turn.	31.00 to 32.00
Shoveling turnings	40.00 to 41.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	68.00 to 69.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	90.00 to 91.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 97.00 to $ 98.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	70.00 to 71.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	32.00 to 33.00
Low phos. plate	105.00 to 106.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	95.00 to 96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	129.00 to 130.00
Low phos. punchings plate	129.00 to 130.00
Drop forge flashings	60.00 to 61.00
Foundry steel, 2 ft. & under	94.00 to 95.00
No. 1 RR hvy. melting	109.00 to 110.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	76.00 to 77.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	100.00 to 101.00
Stove plate	75.00 to 76.00
Stainless	
18-8 bundles	475.00 to 500.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	75.00 to 76.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$100.00 to $101.00
No. 2 heavy melting	94.00 to 95.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	75.00 to 76.00
No. 1 busheling	100.00 to 101.00
Shredder scrap	107.00 to 108.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	47.00 to 48.00
Cast iron borings	41.00 to 42.00
Electric furnace bundles	100.00 to 101.00
Elec. furnace, 3 ft. & under	92.00 to 93.00
Structural and plate, 2 ft.	117.00 to 118.00
Structural and plate, 4 ft.	105.00 to 106.00
No. 1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth.	104.00 to 105.00
Rails, 18 in. and under	122.00 to 123.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	82.00 to 83.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	58.00 to 59.00
No. 1 dealer bundles	87.00 to 88.00
No. 2 bundles	47.00 to 48.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	110.00 to 111.00
Rails, random length	115.00 to 116.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	35.00 to 36.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 57.00 to $ 59.00
No. 2 hvy. melting	51.00 to 53.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 72.00
No. 2 hvy. melting	63.00 to 65.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 bundles	42.00 to 44.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	25.00 to 27.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	71.00 to 73.00
Heavy breakable cast	15.00 to 17.00

San Francisco

No. 1 hvy. melting	$ 92.00 to $ 94.00
No. 2 hvy. melting	82.00 to 84.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 dealer bundles	62.00 to 64.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	108.00 to 110.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to 124.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 78.00
No. 2 heavy melting cut 2 ft. and under	66.00
No. 1 dealer bundles	78.00
No. 2 bundles	57.00
Mixed steel scrap	57.00
Bush. new fact. prep'd.	75.00
Bush. new fact. unprep'd.	64.00
Machine shop turn.	25.00
Short steel turn.	25.00
Mixed bor. and turn.	23.00
Cast scrap	50.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	95.00 to 96.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Crushed turnings	53.00 to 54.00
Shredder scrap	102.00 to 103.00
Cut structural plate 2 ft. and under	128.00 to 129.00
Unstripped motor blocks	86.00 to 87.00
Cupola cast	105.00 to 106.00

NOTE

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IRON AGE

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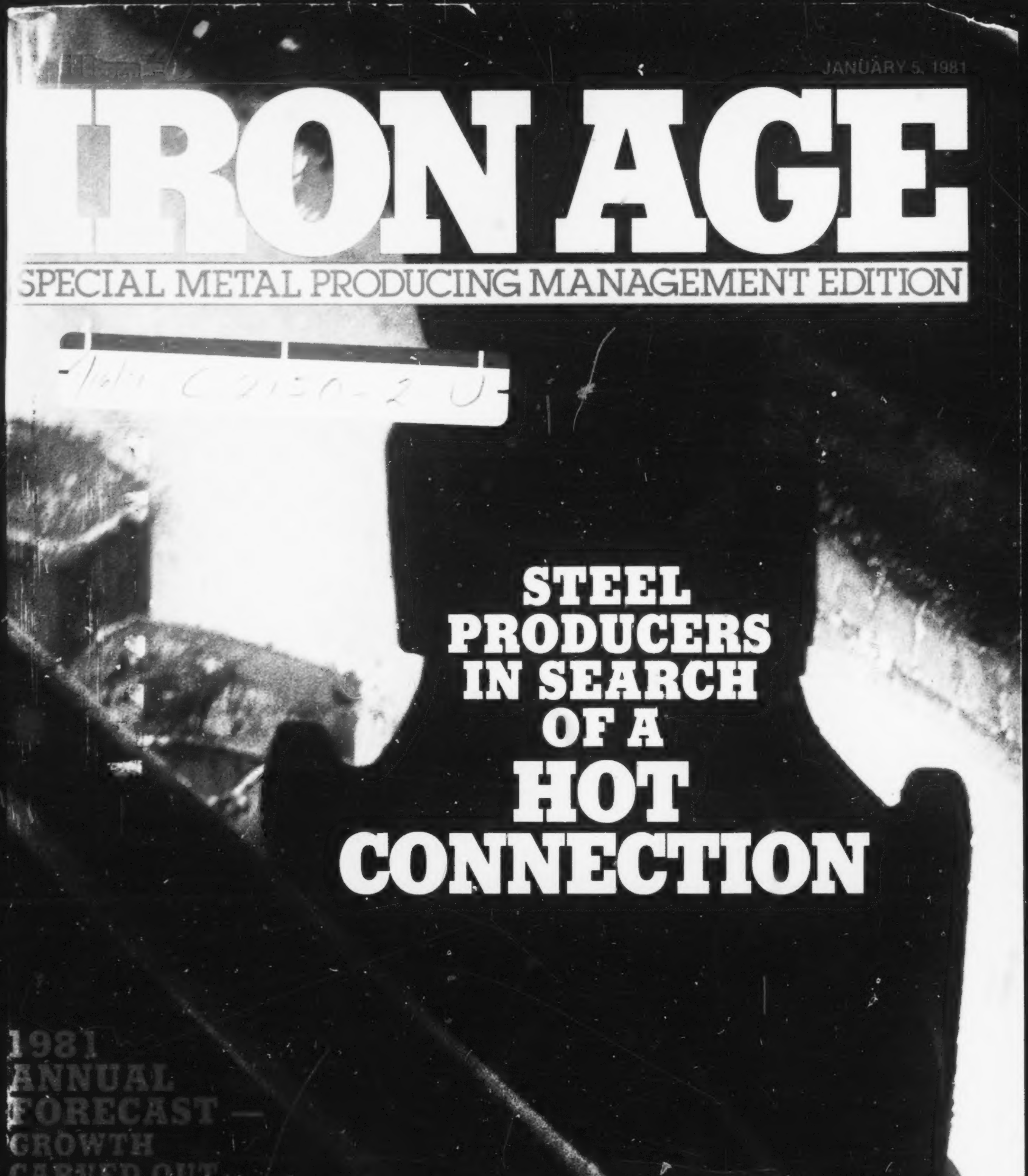


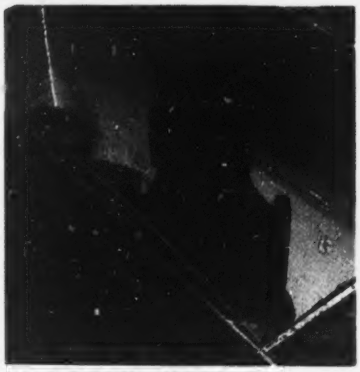
STEEL PRODUCERS IN SEARCH OF A HOT CONNECTION

1981 ANNUAL FORECAST — GROWTH CARVED OUT THE HARD WAY

VOL. 224 NO. 1

IRON AGE

JANUARY 5, 1981



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How world
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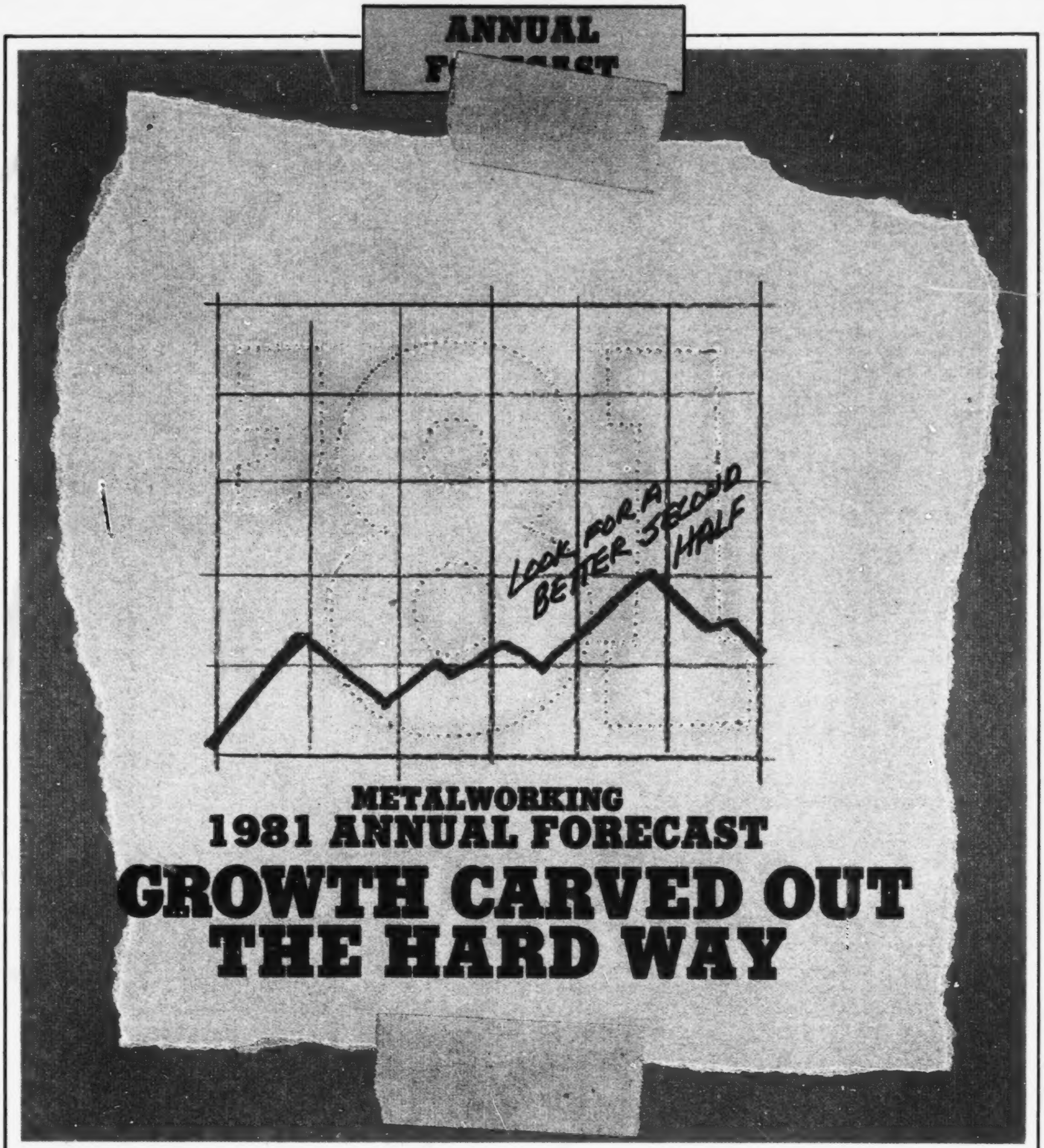
next year

IRON AGE (ISSN 0021-1508) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089


ANNUAL
LOOK FOR A BETTER SECOND HALF

METALWORKING

1981 ANNUAL FORECAST

GROWTH CARVED OUT THE HARD WAY

In early fall of last year, business forecasters were all wearing rose-colored glasses as they viewed 1981. After all, the economy had weathered both a severe credit crunch and the worst single quarterly drop in real growth on record.

In the third quarter the economy snapped back; it registered real growth. All signs were 'go.'

But the Federal Reserve Board was worried as others cheered. Chairman Paul Volcker and his cohorts did not seem to be looking at the upbeat line registered on the economy's growth curve. They could see only an intolerably high inflation rate almost unchanged for three straight quarters.

That wouldn't do.

The Fed lowered the boom on money supply. Interest rates, after falling for months, started to rise again. Still not satisfied, the Fed raised the discount rate—the interest rate it charges member banks that borrow from it—back to a record-tying 13 pct level. The prime rate of interest charged by bankers to business borrowers soon followed on an accelerated upward track to record levels.

And then, in quick response to soaring money costs, auto sales, after showing faint signs of new life, started to fall. Housing starts stopped. The index of leading indicators started to sputter. Business generally, following a brief acceleration, bumped and rocked as gears were down-shifted. Red lights flashed seemingly everywhere in the economy.

So, in December, economic forecasters tumbled all over one another as they frantically back-pedaled from earlier upbeat predictions for 1981.

The back-pedaling became more furious in early December when that oracle of interest rates, economist Henry Kaufman, warned that the prime rate could go as high as 25 pct in 1981 . . . "and probably wouldn't go below 15 pct or so." Mr. Kaufman is chief economist for the investment banking firm, Salomon Brothers.

Of course, everyone knows that as interest rates go up—at least to certain levels—business slows down. It was chiefly this knowledge, and fear, that sent forecasters back to their drawing boards on the 1981 outlook.

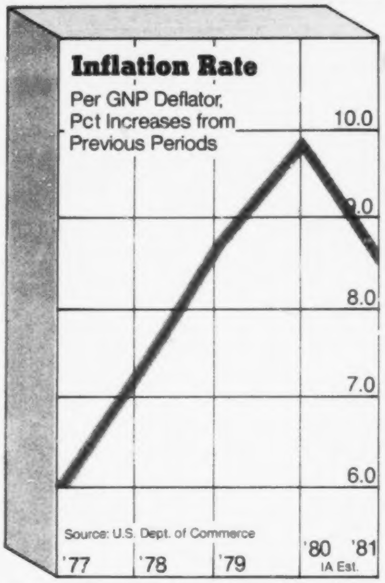
Citing a likely severe credit crunch this winter—similar to the one that brought on the recession in the second quarter of 1980—economist Allen Sinani of Data Resources Inc., in late October said that it was "increasingly probable" that the economy will topple into a recession shortly after Mr. Reagan is sworn into office.

In early December, Mr. Sinai became more fearful. "We are going to have a much deeper economic reversal than earlier expected," he said.

At this time, a very leading question centers on the first quarter, and possibly the second, of 1981. The question: Will we see, or are we now seeing, an interruption in an economic recovery cycle or an outright recession?

Just as there are good reasons to fear the worst, there are some good, or even better reasons to say that only an interruption to recovery has occurred, or will occur.

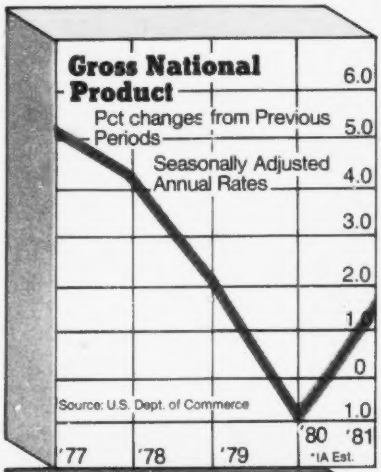
The U.S. economy, for example, continues to show great, and often surprising, resiliency. As one economist notes, "This [resiliency] has been a source of recurring embarrassment to many forecasters who tend to make forecasts on the low side."



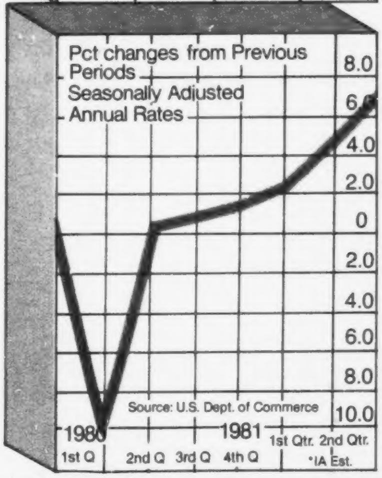
Source: U.S. Dept. of Commerce

This resiliency was demonstrated strikingly when the prime rate in April soared to 20 pct. This towering interest rate prompted cataclysmic forecasts of the economy. But . . . by July, the rate was down to 11 pct.

Also, almost overlooked in present recession-orientated forecasts is the great wring-out of the U.S. economy that has been going on now for years. The estimated near-1 pct decline in real GNP last year marked the fourth straight year of slide in the U.S. rate of economic growth. In the years 1976-80, economic growth successively was 5.9 pct, 5.3 pct, 4.4 pct, 2.3 pct and minus 0.8 pct.

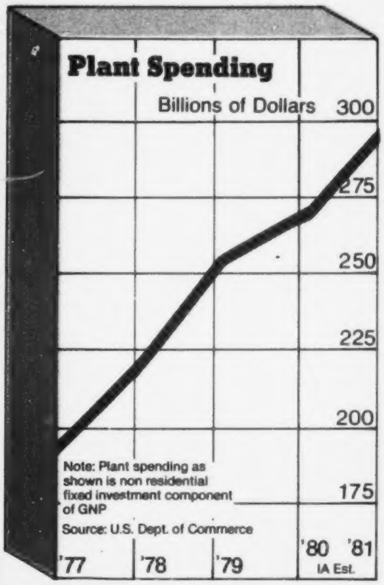


Source: U.S. Dept. of Commerce



Source: U.S. Dept. of Commerce

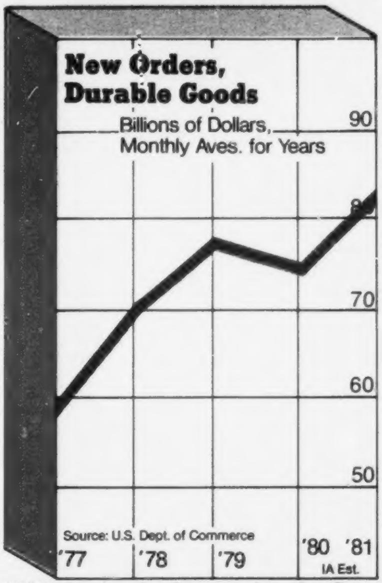
Key assumptions made in business forecasts for 1981 center on whether



Plant Spending

Note: Plant spending as shown is non residential fixed investment component of GNP

Source: U.S. Dept. of Commerce



New Orders, Durable Goods

Source: U.S. Dept. of Commerce

or not the sweep of a new Administration into Washington will give a boost to the economy. Just about all economists claim that no program started by the new Administration can grab hold and affect business in 1981—or only very late in the year at best.

But how about a psychological uplift—one that boosts consumer sentiments and possibly triggers stepped-up buying on a grand scale?

The Conference Board, in its monthly survey of 5,000 households, noted in November a modest improvement in consumer confidence. Notably, the Buying Plans Index was up during the month also.

On the question of a psychological "lift" due to election results, the Conference Board notes, "The election of a new Administration has had little impact on consumer confidence. None of the last four Presidential elections had a discernible effect on consumer sentiment."

Fabian Linden, director of consumer economics at the Conference Board, adds, "The determining factor in consumer confidence appears to be ongoing economic realities, rather than politics."

But the fact remains, the economic setting of the country in election year 1980 was far different from not only the previous four elections, but for all eight previous postwar election years. Last year was the **only** one of the total nine postwar election years that experienced negative growth.

So, 1981 is unique in its political/economic setting. Election year 1980, uniquely, was a downer.

There *is* room then for the U.S. economy in 1981 to get a big lift from the sweeping in of a new Administration in Washington. After all, the key issue of the 1980 election was the state of the economy. The vote—and overwhelming one against an incumbent President—was a mandate, and expression of national hope, for an economic revival.

When it is recalled that President-elect Reagan has given top priority to economic revival, and has also promised that after January 20 he will "hit the ground running," then it does seem the national mood may well be ripe for a big pickup.

So, one assumption underlying the *Iron Age* economic forecast for 1981 is that there exists a very ripe situation in terms of new political leadership and a national mood that is favorable to continued recovery.

Another assumption is that inflation will be cooled off through a combination of the Fed's pressures on money supply and interest rates, and a lowering of inflationary expectations due to new leadership in the White House.

The Fed is knocked a lot for pushing up interest rates, but there is evidence that its medicine works against inflation. This medicine is now being dolloped out to the economy and soon the inflation malady can reasonably be expected to retreat.

In the three-month period just be-

fore the Fed's induced credit crunch in the spring of 1980, the consumer price index rose at an average annual rate of 15.6 pct. In the three-month period immediately following the credit crunch, those prices fell to a 10.8 pct rate.

As shown on the chart on GNP, *Iron Age* is estimating negative growth for the economy for 1980. This decline of 0.8 pct is about in line with the so-called consensus forecast for the year.

But for 1981, *Iron Age* breaks with the consensus view. Most forecasters are hanging black crepe on the 1981 economic calendar. Some have draped the entire year in black, some only the first half—with fingers crossed tightly on their brave second-half guesses.

As noted on the chart, the forecast here is for a modest 1.7 pct increase in real economic growth in 1981. While the forecast for the year as a whole may be modest, there is a notable buildup in the growth rate as the year progresses.

The quarterly breakout of real GNP for 1981 puts gains at annual rates of 5.3 pct and 7.1 pct in the last two quarters. That would mean a high level of business activity. The U.S. long-term annual rate increase in GNP averages about 3.5 pct.

In real dollar terms, it appears here that the output of the nation's economy in 1980 will end up at $1420.2 billion. In 1981, this output is expected to come to $1444.4 billion.

In real dollar terms then, real GNP will be up some $24 billion this year. That compares with a decline of $11 billion last year from 1979.

Next comes the supreme guess. What will inflation do in 1981?

In recent years, nothing has knocked economic forecasts off target more than bad guesses on just what prices would do. Not suprisingly, price forecasting in recent years has usually missed on the low side. In other words, nobody has really believed that inflation would run into such high numbers.

Over the past four years of 1977-80, inflation successively took bigger chunks out of real economic growth each year. From 5.2 pct in 1976, the inflation rate swelled to an estimated 9.9 pct rate last year. This rate is based on the GNP deflator which is the most extensive measure of price changes in the economy.

The overall GNP inflation rate runs lower than the consumer price index. Consumer prices last year hit an estimated 10.6 pct compared to the GNP rate of 9.9 pct.

As noted on the chart here on inflation, a falling in the GNP price measure is expected this year. That, of course, refers to a lessening in the rate of increase; it does not mean that prices are expected to fall. The 8.7 pct as shown means that prices this year are expected to rise by 8.7 pct—as opposed to the 9.9 pct rise last year.

It will be a combination of factors that will tend to cool inflation this year. For one, Mr. Volcker of the Fed has promised to keep monetary pressures on to fight inflation. And, as shown earlier, he did cool it off the last time he went on the war path in the spring of 1980.

Also, the recent lessened rate of activity in business will likely in a short time lead to an ease in demand pressure for loans. And in the short term, that can throw a block in the way of ever-higher interest rates.

Too, the new President can be expected soon after January 20 to take action—very possibly drastic action—to cut inflationary expectations. It is such expectations that tend to build a high platform under the inflation rate. If that tumbles down, actual price levels can be expected to tumble.

On a quarter-by-quarter basis, the GNP deflator this year is forecast to go down step-by-step. From a 9.3 pct rise rate in the first quarter, inflation is expected to hit figures of 8.8 pct, 8.6 pct and then 8.2 pct in the final period.

Sometimes the overall economy is one thing, but the state of any particular business sector is another. But the improvement in the U.S. economy in 1981 as seen in this corner, will translate into possibly even greater gains in the metals and metalworking manufacturing sector.

Business spending on new plant and equipment will be much stronger in 1981 than in 1980. But, because this big tag spending tends to lag overall economic recovery, the real gains will likely be building a head of steam as the second half of 1981 rolls around.

Plant spending will expand for the same reasons that the economy will grow in 1981. Additionally, it will expand strongly—perhaps more strongly than the overall economy by year-end—because of great pent-up demand in the capital goods sector.

This pent-up demand is reflected in the recent growth lag in plant spending in relation to the overall economy. Gross National Product, the measure of overall economic growth, declined by 2.3 pct from the opening quarter of 1980 to the end of the third period. Plant spending fell off by more than twice that rate. Too, record capital spending by the self-renewing U.S. auto industry accounted for a greatly disproportionate amount of such outlays that were made.

It is this pent-up demand for a new plant and equipment that should give this spending sector special force in 1981. *Iron Age* sees business fixed investment in 1981 rising by more than 10 pct—up from $270 billion in 1980 to near $300 billion in 1981.

As the new year matures, plant spending should pick up speed. *Iron Age* forecasts that this spending in the closing quarter of 1981 will be at a level some 16 pct higher than the annual spending level reached in 1980. And, considering that inflation should be tempered by the last half of 1981, this means year-to-year gain comparisons will be more striking—in favor of 1981.

Finally, there is a look at 1981 expectations for durable goods orders. The orders flow is probably the best single measure of the health of metalworking industries. Some 85 pct of these orders flow to metalworking industries.

Iron Age, based on actual data covering 10 months of 1980, estimates these orders for the year will total about $910 billion. (Note the $75.8 billion monthly average on chart).

And for 1981, *Iron Age* forecasts durables new orders will total just over $1 trillion, a gain over 1980 of 11 pct. As in the case of plant spending, and gains in the economy itself, the year, for durables orders, will improve as the year matures.

John D. Baxter

Steel

Steel men are bearish about 1981.

A typical prediction for the year calls for shipments of 90 to 95 million tons. There are private estimates that shipments could be as low as 85 million tons.

The caution of steel men is mildly puzzling. Over the past three or four months, orders and shipments have exceeded expectations. The 7.7 million tons shipped in December was the best since March.

The expected letdown after price increases in early January has not developed. Enough tonnage has been booked to make it certain January will be as good a month as December.

All of which reflects a dramatic recovery from the summer slump. In October and November, major mills took in orders at more than 100 pct of capacity. There was no slowing of the order flow in early December.

The steel import situation seems to be under control, at least, temporarily. A new trigger price system is in place. This has special provisions to keep imports from surging in weak markets. Compliance with the trigger system is dictated by political muscle in Washington and by the threat of dumping complaints.

Finally, there is not a lot of excess inventory hanging over the market. Steel users liquidated 6 or 7 million tons of inventory in 1980. The stabilizing of inventories should add that much tonnage to 1981 shipments. There was some price hedge buying in December, but mill shipping limitations preventing any buildup.

Despite all the favorable factors, steel men are uneasy about the future. The fears that were centered on January have been shifted to February. The most optimistic projections would make 1981 a mediocre year, up from the 84 million tons of 1980 but down from the 100 million tons of 1979.

The industry's mood is indicated by the way mills are still reaching out for business. The rise in shipments from 5.3 million tons in July to 7.7 million in December did not eliminate price discounting. Price and profit problems possibly explain why steel people have been unable to work up much enthusiasm for their recovery.

The other depressing influence is the rise in interest rates. The steel market collapsed last March, when the prime rate hit 20 pct. By early December, money costs were again apparoaching that level.

It isn't expected that interest rates will trigger another violent inventory contraction. However, high money costs are seen choking off auto sales, home building and industrial construction. Steel companies had been counting on a rise of three or four million tons in consumption next year. If tight money is the order of the day, consumption of steel could go down rather than up.

While they are cautious about 1981, steel men seem to be viewing the long term future with growing confidence. The need for steel in the energy market has already brought announcements of two new seamless mills. A number of continuous casting projects have been turned loose. There are plans for new rail mills.

There are signs the industry is starting to act on its predictions of a boom that will develop when the nation does something about energy, transportation and housing needs.

With the Republican Administration expected to take a hands-off position on prices, steel men find themselves with prices held down by market forces.

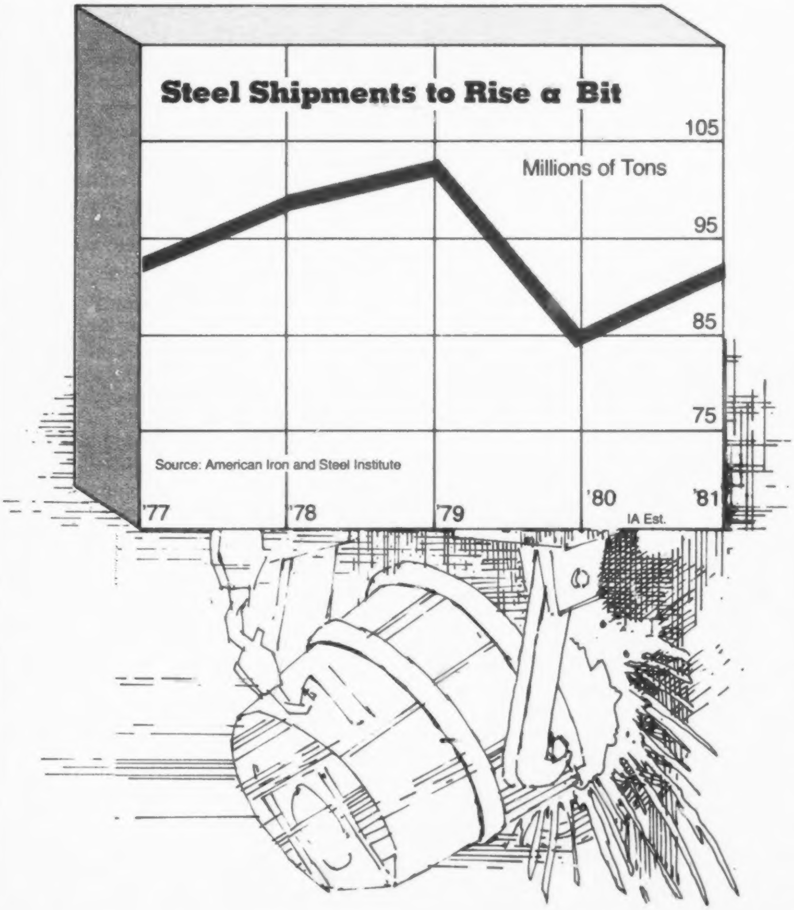
Steel imports in 1981 aren't expected to exceed the 15 million tons of 1980. And the 1980 imports were down from 17.5 million tons in 1979 and 21 million tons in 1978.

Steel exports could decline from the surprisingly high 4 million tons of 1980. With the whole world in a recession, competition for export business should intensify. However, the net movement of steel into the U.S. should remain at about the 1980 level.

The domestic auto outlook remains bleak, but the auto industry wasn't taking in much steel to start with. Through September of 1980, shipments of automotive steels were down 43 pct from 1979.

Oil and gas drilling is expected to rise 14 pct in 1981. That will be on top of a 17 pct gain in 1980.

The most critical areas for steel are industrial construction and machinery sales. Both are expected to be down from 1980.



Steel Shipments to Rise a Bit

Source: American Iron and Steel Institute

Nonferrous Metals

Nonferrous metals producers are understandably cautious about the 1981 outlook considering the basketful of adverse factors the economy toted into the new year.

General expectations are that the second half will be better than the first half. Assuming that proves true, 1981 will be somewhat better than 1980.

With automobile production and sales, construction, appliances and other key metal-using industries limping into 1981, interest rates discouraging new purchase commitments, inflation persisting and European economies slipping into lower gear, even bridled optimism looks a little out of place.

It took a busy export market to sustain the aluminum industry last year. Overseas business accounted for roughly 15 pct of total shipments in 1980, compared with under 7 pct in 1979.

Most of the export volume, which was up 130 pct in 1980, was accounted for by ingot and scrap. This helped hold the industry's total shipment drop to a slim 2.2 pct to approximately 7.14 million tons.

Export business began picking up again late in the third quarter, but with the European economy beginning to slow down, the U.S. producers may not be getting as much help from that quarter in coming months.

The beverage container and aerospace markets remained firm for the aluminum suppliers last year, but the automobile market bordered on being a disaster area—particularly for the secondary aluminum producers. Detroit's showing forced some aluminum producers to pare fourth quarter price hikes on auto sheet aluminum items by nearly 40 pct.

The aluminum producers, in their usual fashion, settled new three-year wage pacts without disruptions to production. The copper producers, in their usual fashion, settled new three-year wage pacts after lengthy strikes that put deep dents in domestic production.

And, while aluminum ingot was a big export item in 1980, refined copper was a big item in the imports column and the combination of heavy imports and recession-reduced copper consumption didn't do much to improve the domestic producers' statistical position during the strike. Prices weakened, of course, as domestic copper units came back onstream.

Emerging from the strike into the continuing or renewed recession has made the copper companies a bit gun shy in the projection department. Their immediate goals appear to be to keep production in check until demand picks up again, meanwhile hoping that foreign producers feel inclined to do the same. There was a general expectation that the import flow would abate as domestic facilities came onstream. Copper's medium to long term prospects are seen fairly bright as demand moves ahead of projected supply.

The trick is to get there without too many bruises during the buffeting expected over the next several months.

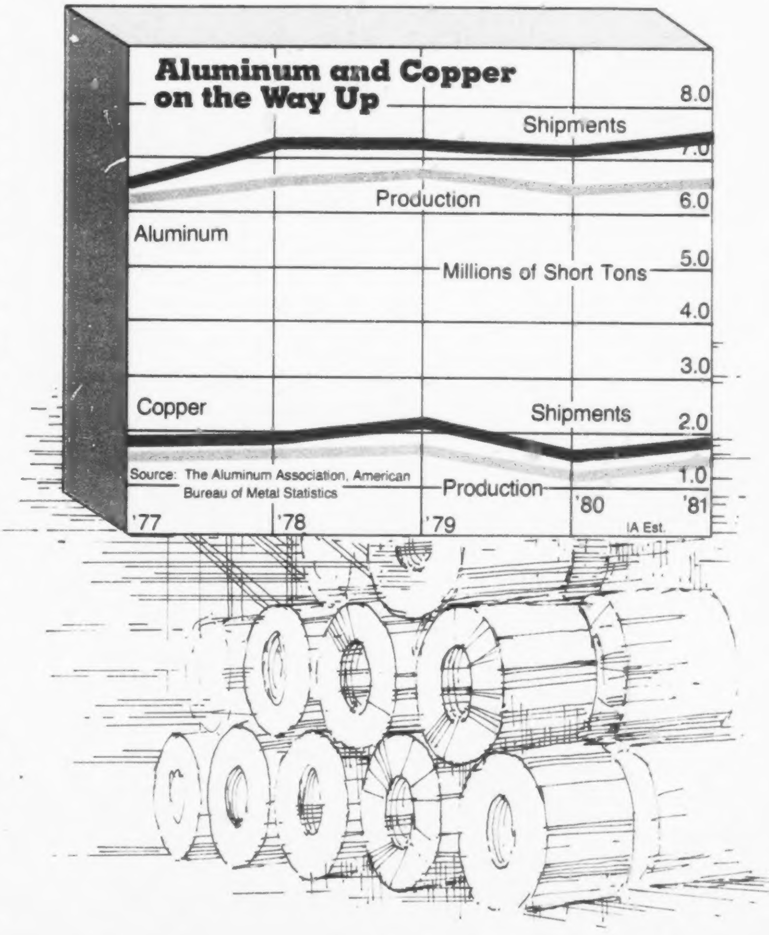
The lead and zinc producers' fortunes are tied closely to the fortunes of the auto industry. Imported cars, of course, carry imported lead acid storage batteries, zinc galvanizing, etc.

Lead producers also are hoping for a more normal winter season; the unusually warm winter of 1979/80 didn't do much for the replacement battery business a year ago and the new replacement season didn't exactly get off to a flying start either.

Russian lead buying on the European market began tailing off toward the end of 1980, reportedly reflecting a degree of price resistance. Soviet purchases were sustaining factors at times in 1979 and 1980, but, since they conform to no set pattern, can't be factored precisely into any 1981 outlook.

Free world nickel producers were keeping tight reins on production as 1980 drew to a close while hoping to keep discounting practices to a minimum.

Being tied to capital expansion, nickel usually lags the general economy by about 6 months, which suggests that 1981 isn't exactly going to be a rosy year in this corner of the nonferrous metals business unless Official Washington comes up with some new programs to stimulate investment.



Source: The Aluminum Association, American Bureau of Metal Statistics

Machine Tools

For the fourth time in as many starts, United States machine tool builders are entering a new year on a note of optimism.

The nation's auto, defense—and even farm and off-highway equipment—industries will continue to place orders for new machines at high levels throughout the year, most U.S. builders believe, and that should result in yet another year of better-than-average sales and profits.

To be sure, 1981 will be no record-breaker.

Incoming orders for new machine tools began to taper off significantly in the final three months of 1980, despite a highly successful International Machine Tool Show in September and an industry-wide improvement in delivery times. As a result of that drop-off, net new orders for the first 10 months of 1980 ran some 14 pct off 1979's pace. That, in turn, led most experts to predict that sales for the year would barely inch past the $5 billion mark, a good $500 million below 1979's $5,532,750,000.

Furthermore, many builders told *Iron Age* that incoming orders could remain rather flat at least through the first half of 1981 and perhaps longer.

With the interest rate soaring to a new high many new or planned capital budgets have been put on the back burner or at least on hold until executives have an idea what the first quarter of the New Year will bring.

However, many executives in the machine tool industry are pointing to the hopeful signs of a Reagan Administration. It is well known that Mr. Reagan favors business incentives. Mr. Reagan has said that he will propose major tax cut legislation and some form of capital equipment depreciation in order to get industry moving again.

If Mr. Reagan is true to his word in these two areas, then machine tool builders should have a better than average chance at making this year a better than average year.

But despite all that, most builders are confident that another $5-billion-plus year is well within reach in 1981, and that prospects for the 1982-85 time frame are at least as good and probably better.

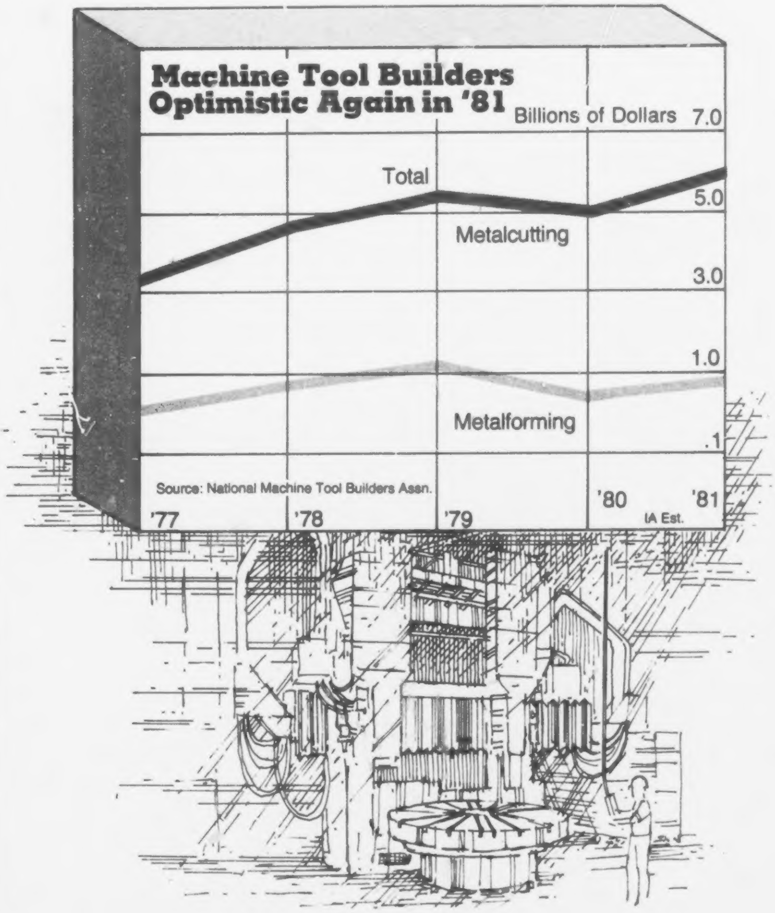
If there is a weak spot in the machine tool market, it is in the market for new forming machinery and equipment. Delays and hesitancy in the auto and appliance industries—and a glut of machines on the used equipment market—could severely depress sales in the forming sector. That in turn could force press builders and others to step up marketing efforts abroad, a move many forming machine builders have been reluctant to make in the past.

A machine tool executive summed up the situation nicely. "We look for both sales and earnings to show further gains in fiscal 1981. With our large backlogs, we will be shipping at record levels. A temporary lull in orders will benefit both us and our customers, because as the backlog becomes lower we will be able to shorten delivery times, which are now at well over a year. This will make us more competitive with overseas manufacturers, who have enjoyed a big advantage in this respect."

The executive said he expects machine tool orders to pick up momentum again in the last half of 1981 and to remain strong well beyond that.

"The new dimension that changes the machine tool outlook is the urgent need to make American industry more competitive," he said. "The industries we serve must remain on schedule in modernizing facilities. In America today, we have a situation where two-thirds of all machine tools are more than 10 years old. These out-of-date tools will not get the job done in a highly competitive world economy."

He identified a key element for a successful year in the machine tool industry this year when he noted that shipments at his company are expected to reach record levels in 1981. Shipments have been rising steadily throughout the industry during the last three years as more and more builders add to capacity. Shipments for the first 10 months of 1980 stood at $3,827,750, a hefty 23 pct ahead of 1979's pace, for example. And some experts believe that shipments could climb above the $5 billion level in 1981.


Machine Tool Builders Optimistic Again in '81

Source: National Machine Tool Builders Assn.

Automotive

"Interest rates are killing us," says one auto dealer. "If it stays high, say around 20 pct, we'll just close the doors."

Car sales for 1981? "Your guess is as good as GM's," he adds.

GM's guess? "We're sticking to our figures," says a GM source. The giant automaker expects 1981 to be up from 1980 by several percentage points, as the year progresses. "People have to buy new cars someday," the GM source notes.

What does a Reagan Administration portend for automotive? "Our business, obviously, is capital intensive, but, even more obviously we're a consumer business. So we may be very glad indeed about Mr. Reagan's election, but from a sales point of view I don't see any direct bearing," says one auto company executive. "Maybe the fact that he's riding to his Inauguration, instead of walking like President Carter, is a good sign for us," he quips.

"One thing we hope for," he adds, "is a more sensible Federal policy on imports. They now have about one fourth of the U.S. market. I don't think that's good. I don't think President-elect Reagan thinks that's good. But, I also don't think President Carter thought that was good either."

What really worries many auto execs, however, is not interest rates or imports, important as those concerns may be. "It's inflation, from materials to labor costs to interest rates to taxes to everything," says a Chrysler spokesman. "If Mr. Reagan really wants to do a great and noble deed, it's controlling inflation. That's the problem. We'll lick the foreigners, albeit in a few years. The problem is inflated currency. I don't blame anyone who yells about car price. But it's not just car prices. It's not even prices. It's inflation. That's the word we should all be yelling," he says.

"I agree," says a Ford manager. "It's insidious, this inflation. In fact, it's a disaster. If it keeps up, I think we're going to face a far more serious problem than low car sales. We'll face no car sales. If the underlying rate is, say, 10 or 12 pct, imagine a moderate size car price in a few years. It's ridiculous!"

"What we hope for," says another Ford source, "is that Mr. Reagan sticks to his guns and goes after Public Enemy Number One—inflation.

"We, as companies," he adds, "will clearly benefit from an increase in defense spending. But none of us is so heavily involved in military hardware that it would ever offset a really long depression in car sales.

"Now I know," the Ford source says, "people don't use that word anymore. But what else can you call the last few months in terms of domestic car sales? If the Reagan Administration moves fast on inflation, and that means cuts in the budget and cuts in personal income taxes, then we'll see some confidence in the market again."

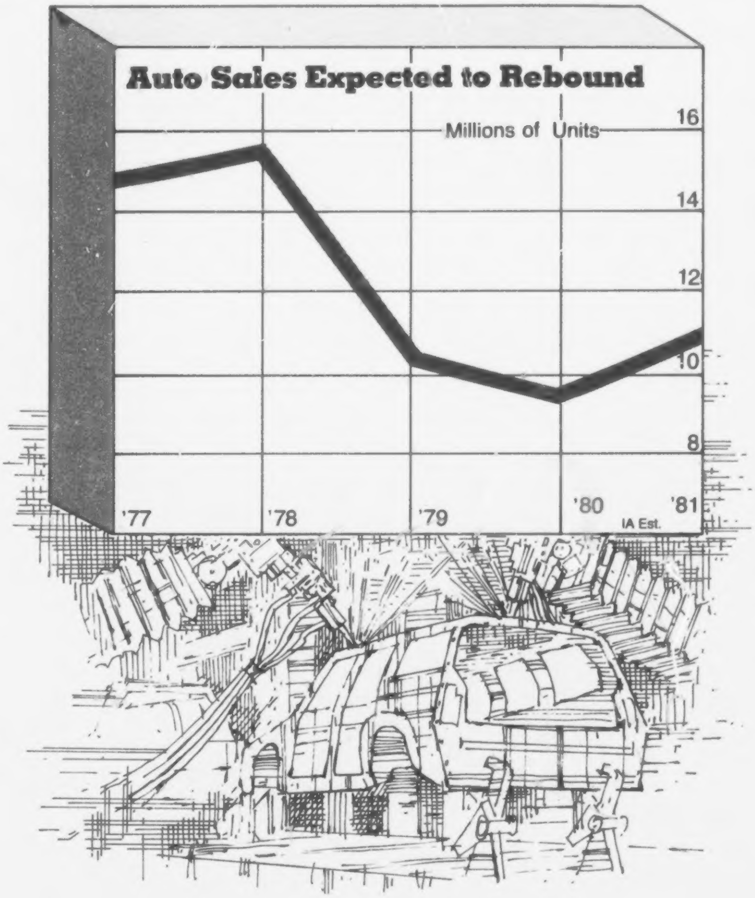
Most automotive industry managers expect 1981 to fit pretty closely to GM's "optimistically cautious" scenario, says an AMC executive. "We're on the button now in terms of what the American market wants. In fact we were too early," he adds. "What Mr. Reagan can do for us as an industry is shore up the dollar at home. We're ready for business in 1981, but we've got to have a public that is not constantly extrapolating about gyrations in both the cost and the worth of the dollar."

Capital spending in 1981? "Billions no matter what," says one industry observer. "Billions in '81. Billions in '82. Billions in '83."

Even though the industry is going through some rather rough times, to say the least, its capital equipment suppliers like machine tool builders will continue to enjoy good order backlogs from Detroit.

Retooling is still a much discussed area of concern for Detroit's Big Four and will continue to be that way in the foreseeable future. Detroit will continue to focus its attention on the machinery that will increase its productivity, cut down on its labor costs and in the long term, improve its profits.

So for 1981, the auto industry may not be quite as busy selling as it wishes. But it will be far busier than some other industries in terms of investing in the future. "There's no choice for them in that area," says the analyst.



ANNUAL FORECAST

Construction Equipment

Executives in the construction equipment industry are hoping that the conservative winds of change that come to Washington this month will blow away the economic gloom clouding their industry.

The past year was a bleak one for the equipment makers. It began with International Harvester still locked in a bitter labor dispute with the United Auto Workers. That strike was not resolved until the second quarter.

Next came President Jimmy Carter's decision to restrict trade with the Soviet Union in retaliation for the Soviets' invasion of Afghanistan. While it is generally agreed that American farmers fared worst under the embargo, the construction equipment makers also chalked up some losses as a result of the trade sanctions.

Figures at midyear showed the industry's exports to the USSR nosediving to a meager $198 million for the first six months of 1980 from $378 million during the first half of 1979.

Next came the Federal Reserve Board's declaration of war against inflation. The subsequent credit crunch in the second quarter helped to turn what looked like a mediocre sales year for the industry into a debacle.

"I felt like we were on the ropes all year," said one industry spokesman, "and I know that our company is in a better position than some of our competitors."

Indications of how badly the industry was suffering were apparent in the third quarter. Layoffs reached an estimated 10 pct of the industry's workforce and several of the major manufacturers were announcing or planning one or two week shutdowns of some plants.

With 1980 now a part of the history books, many of the construction equipment makers are looking forward to a recovery this year. When it will arrive, however, remains a debatable point.

"I see home building picking up early," says one sales executive, "possibly in the first quarter. I believe that many of the contractors are going to take a shot at it early because they recognize that the demand just cannot stay as pent-up as it has been."

Another industry member agrees and attributes his prediction of a 30 pct boost in housing starts to what he calls "intangible factors."

"Part of it will be the new slant on the economy that the Reagan Administration will bring to the nation. I think a lot of people felt that Carter had a poor handle on the economic problems and that Reagan seems to know better what he is doing in this area," he says.

A third sees construction reviving but feels the turnaround won't come until midyear at the earliest. His reasoning: The recent increase in the prime rate to the 20 pct level and expectations that it may reach 25 pct before during the first half of this year.

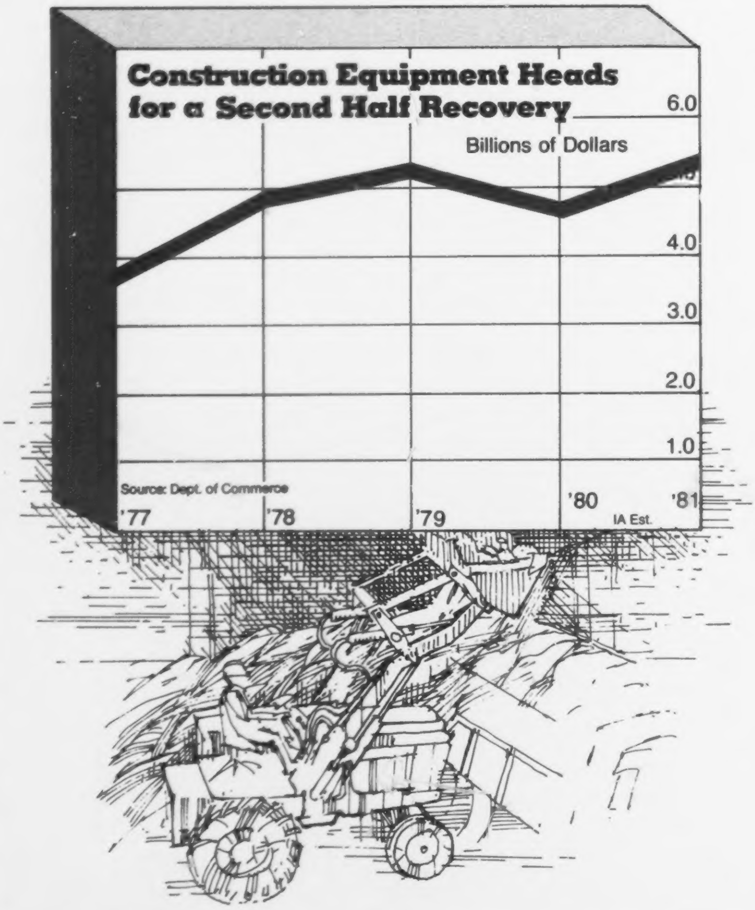
"I don't see much movement until, maybe, late in June," he explains, "and then by July we should see some healthy activity in housing starts. I watch the permit applications closely and thus far, I haven't seen any trends that point to an early recovery."

While there is some hope for a revival in the home building market, the signs are still gloomy for the road construction segment. One explanation is the higher mileage cars talking over American highways and the failure of state governments to anticipate that trend.

Much of the highway construction and resurfacing is tied to the state gas tax levies, most of which operate on a cents-per-gallon formula. Since motorists are consuming less gasoline, the tax base has shrunk. As a consequence, many highway and road rebuilding projects are being shelved.

The nonresidential construction market has been both strong and weak in the past year. Construction of small commercial buildings mirrored the housing market's lack of activity, while builders of large office buildings reportedly were busy much of the year.

One strong market niche is the oil field, where demand for engines and machinery has increased in tandem with the increased domestic drilling activity. Machinery demand also remains strong from the overseas oil-producing nations in Africa, the Middle East and Latin America.



Farm Equipment

Farm equipment, which had been showing one of the better recoveries in the second half of 1980, has begun to cool in reaction to rising interest costs.

A flurry of year-end tax purchases by farmers of heavy equipment would help to bring up the final 1980 total, but the industry seems a lot more cautious about 1981 than it was earlier.

This could result in more manufacturing slowdowns in the opening months of 1981. Farm machine marketers still expect the industry can squeeze out a unit sales gain in 1981, to 138,000 retail tractor sales. That figure represents about an 8 pct gain, though the range of estimates is all the way from a low 4 pct to a high of 10 pct.

Usually, that kind of spread on the forecasts suggests that everybody is a little unsure. And that, in turn, almost always precedes a slowing of manufacturing rates.

Farm equipment had been showing some gains in fourth quarter. Sales wobbled over and under forecast from a surge in July preceded a slippage in August and a mild recovery in September. October saw a retreat below the normal seasonal advance followed by a strong surge forward in November. December, as indicated above, should also see some relatively good year-end sales, even though this isn't a strong selling month in any year.

The farm machinery industry has to build in first quarter to provide for second quarter spring planting sales. But the industry's managers aren't pushing their plants very hard. They say now that their main gains will come in second half. That is fall harvesting equipment market and they'll start building that machinery in second quarter. But it still leaves first quarter as a slower period for farm machinery suppliers than should be the case.

The interest rate and its effect on dealers is the main problem. Some softening in farm commodity prices recently is another worry. Until now, a lot of farm area banks have been literally stuffed with cash from the record farm income of 1980. They still have it, but farmers seem unwilling to borrow it to buy equipment at current interest rates. And if crop prices continue to slip, they'll be even harder to sell.

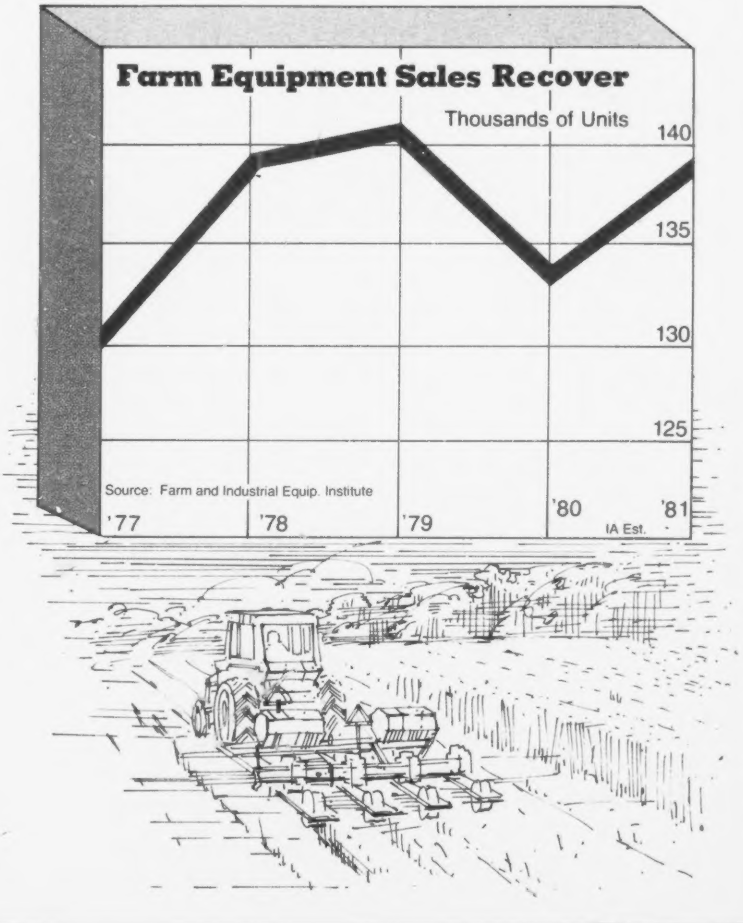
Balanced against this is a real need on the farms for some new equipment. They didn't replace enough of it in 1980. And they accumulated some extra cash in 1980. Both of these point to a good farm equipment market in 1981. And that may be why the farm machine plants are sticking to the forecast of 8 pct unit gain, even though they act like they are stocking up for about half that.

There has been a growing interest in the U.S. in the past year, at least, in the smaller tractor market, at 40 hp to 60 hp. In the past there had been a tendency to concentrate on the bigger horsepower tractors, where sales have been showing the best growth. In that same period, imports, particularly from Japan, of smaller tractors have been rising and some U.S. farm equipment builders have been distributing imported tractors in the smaller horsepower sizes.

During 1980, however, there has been a growing interest in smaller tractors and smaller engines. So that while some manufacturers of farm equipment lines are increasing their imports of off-shore small tractors, some are beginning to step up their own plants for units built in the U.S. This has also brought some additional interest in small diesel engines, which in 1980 showed some unexpected sales gains in the first half.

The main emphasis on big tractors as the main market factor continued in 1980, however. Big tractors have been strong for years, as have been big ticket items like combines. So that despite low unit shipment figures, total sales volume in dollars has been strong. In 1980, in a fiscal year ending in October, Deere & Company hit $5 billion in sales. That's the first time the company has hit that high a volume.

Deere has said it will raise production schedules in 1981 over the fiscal 1980 level. Despite this comment from the largest U.S. farm machine producer, general industry opinion for 1981 is cautious about first half, which is usually the industry's strongest period.



Source: Farm and Industrial Equip. Institute

Material Handling Equipment

"We haven't suffered as much as some industries during the past recession," says one material handling executive, "but times could have been better."

Will the times for material handling be better in 1981 due to the new faces and policies in Washington?

"I think so," says the same executive, "because I see the new Administration as more industry-oriented. Mr. Reagan and his advisors seem to be quite cognizant of the underlying problems in the American economy. They've made it clear enough that the issues to be addressed are inflation, defense and productivity. That last issue is our issue."

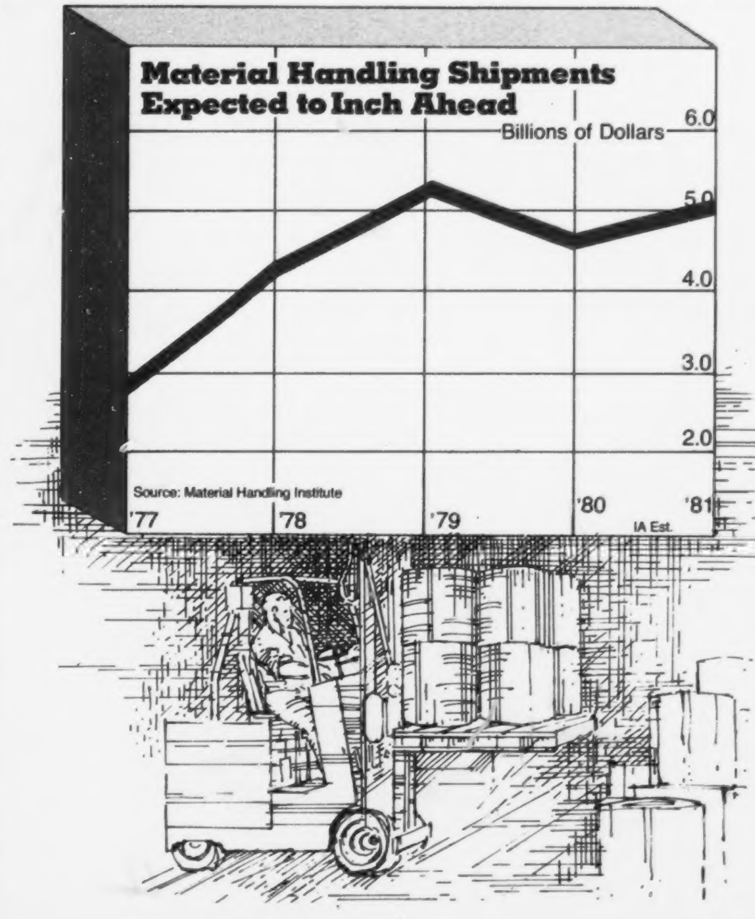
The material handling industry sells itself on that issue. Thus the generally optimistic tone in the business today. "We make stuff that does just that," says another industry manager. "It ups productivity. In other words, we have the solution to the problem that this new Administration says it can solve."

A Reagan Administration "is going to be a confidence restorer," adds another. "That's the big problem we have in our business. You buy our kind of product for the future. It's going to work for years.

"We've seen the marketplace go gloomy on us over the past several years. We've seen orders not booked because of uncertainty, or industries moving overseas because of anti-business feelings in the U.S. That's gone at the top, at least for four years, and I think it's going fast in the rest of the country. So we see a very hopeful period, if not a great period beginning for our industry."

Others in the material handling business agree. "I see 1981," says another, "as quite possibly a great year in terms of bookings."

What about interest rates? "Yes, that's a problem," he adds, "but it's not the level, it's the fluctuations. If interest rates were to stay, by some perverse law, at 20 pct, our business would suffer enormously from undercapacity."



Source: Material Handling Institute

The wild ups and downs in the cost of money means nothing short of chaos in any industry that sells big-ticket items. The huge systems end of the material handling industry delivers packages costing tens of millions of dollars. "Buy now or wait a month shouldn't be a question, but it is in our industry," notes a major company in the material handling field. "What President Reagan can do about interest rates is, I suppose, not much," he adds.

Still, 1981 is projected as a very good year for material handling equipment makers of all kinds. "Naturally we're enthusiastic," says one industrial truck maker. "I expect, at the very least, an emphasis in Washington on improving the productivity of our economy. We can't lose there. At best," he jokes, "I think they'll give us enough time to turn the productivity slide around."

Most material handling company managers view 1981 as "an up year," says another. "The whole country is talking our way these days. Supply-side economics? That's us!" he says.

President-elect Reagan's new team has been quoted often on "re-industrializing America." That makes most material handling company managers see 1981 as the beginning of a very hopeful period indeed. But how will such a tremendous goal be accomplished?

Does the next four years mean stabilized interest rates?

An end to double digit inflation? Some new and far more attractive write-off policies?

Material handling suppliers and users know that their technology only makes sense when it's being used. Its efficiencies are found when business is good and steady.

A new, state-of-the-art material handling high rise system can cost a bundle. Buying one is an investment that a company makes only if its future is secure.

If the Reagan Administration offers such a picture of security, then the material handling industry predicts four years of prosperity. Clearly it is such a picture that is expected in the industry.

Thus the outlook for material handling in 1981 is one of growth. How much? A reasonable guess would be 15 pct in real dollars over 1980's bookings.

Appliances

The appliance industry approaches 1981 with caution but not with high hopes of posting a 31 million unit year.

After running flat through the second half of 1980, appliance shipments should advance seasonally in first quarter of this year. Normally, they'd go up a strong 30 pct, as factories ship out appliances to their wholesalers and retailers for the Spring selling season.

But with skyrocketing interest rates a pall of caution has gripped the industry. Even with the interest rates so high appliance makers are still forecasting a 4 pct to 5 pct unit sales gain in 1981. But they aren't stocking for it—not yet. Shipments in first quarter could advance to about 7 million units from 6 million units in the last quarter of 1980. That's about half the normal seasonal gain for first quarter.

There will be wide variations. Room air conditioners had a very strong 1980, wiping out a long-standing inventory surplus. Microwave ovens, riding the energy-consciousness wave, blazed through 1980 with cumulative gains that may finally add up to about 20 pct up for the year.

So the appliance industry manufacturing rate in first quarter is stronger than it has been since early 1980, but it is still not going to reach the 8 million units shipped in first quarter 1980.

On the other hand, field inventories seem to be lean enough, and factory inventories low enough; there isn't the fear of an inventory glut like the one that paralyzed appliance plants in 1975.

The forecasts are still at the same level they were before the high interest rates hit. They were conservative then, and appliance companies seem to feel they can stick with them. But their first half manufacturing rate is even more conservative. If interest rates begin to fall after January, it's very likely that some appliance builders will have to raise their manufacturing rates by March. That isn't without precedent. In fact, the boom year of 1978 started the same way.

But nobody's counting on any boom. And they are pegging their manufacturing rates low enough, in most cases, that there's going to have to be a lot more of a slump in retail sales than now is expected before they'd have to make further manufacturing cutbacks.

Another question mark for the appliance makers is the new housing market. Housing starts are expected to register at about 1.4 million new units for 1980, not one of the construction industry's better years.

Some forecasters are anticipating home building to recover this year, possibly to a 1.7 million or 1.8 million total for the year. If those predictions prove accurate, they could bolster the appliance industry's hopes for 1981.

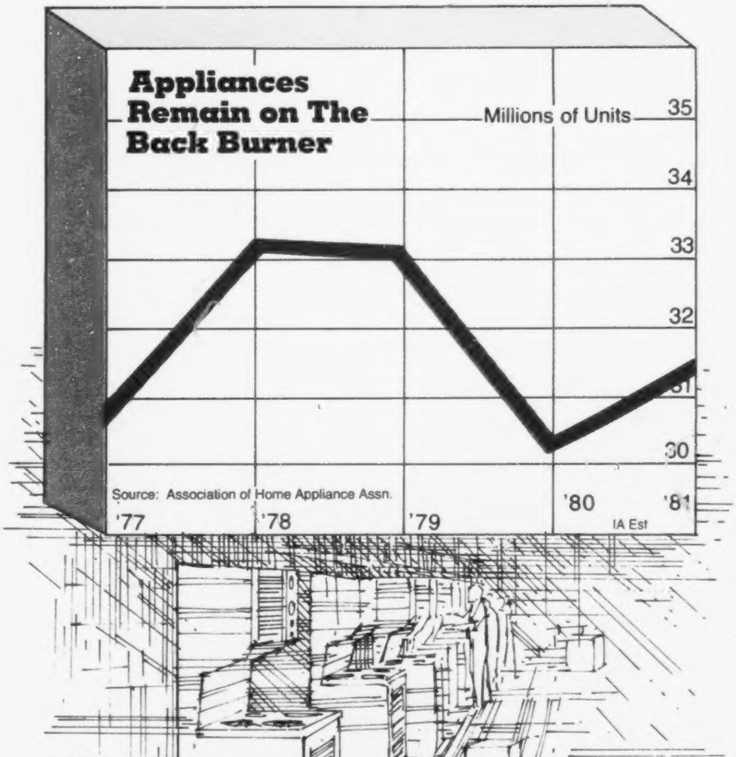
Lean inventories should be impressive. The industry did a good job of shipping in first quarter 1980. In fact, it was one of the biggest quarters in industry history. It could have produced a dangerous glut. But a radical second-quarter cutback in 1980 ended that threat.

In 1980 microwave ovens posted big gains. There's already some evidence this appliance could again be the industry leader, with at least one forecast of a 15 pct gain for the year. That's above the average gain expected for all appliances.

The industry has often been able, in the past, to coast along in first calendar quarter, keeping those lean inventories at about par without building up additional field inventories of finished appliances. By second quarter, however, it has to begin stepping up shipments for the summer-fall selling season.

The first quarter manufacturing rate is not expected to lag the levels needed to hit even the conservative forecast for 1981 annual totals. Somewhere in second quarter, the industry may have to make up some field inventory declines.

Normally, the bulk of total sales at retail fall in second half. Appliance makers seem likely to drag their feet on production rates of new appliances until then. When this happened in 1980, it caused a near-sellout of room air conditioners, with some sales lost by people who couldn't get their factories going fast enough to catch the sudden revival in the June-August market.


Appliances Remain on The Back Burner

Source: Association of Home Appliance Assn.

Metal Coatings

Producers of organic coating materials felt the full impact of the slowed-down consumer demand for such products as automobiles and appliances as well as other industries that are heavy paint users.

Although the final figures for 1980 have not yet been tallied, shipments through September indicate that industry shipments for 1980 will add up to about 352 million gallons. If this shipment figure turns out anywhere near correct, it will represent a drop of between 14 and 15 pct—the sharpest drop experienced by the paint producers in a number of years.

Moreover, the industry foresees much of the same trend extending well into 1981 with some recovery expected in the latter half of the year. By year's end, overall shipments for 1981 should be somewhat better than those of 1980—perhaps in the neighborhood of 5 pct.

Even this projected modest increase is hedged with a lot of "ifs"—if the economy picks up; if interest rates drop considerably, if the new administration gives business the shot of confidence it so badly needs; if government regulations are relaxed.

Unfortunately, the coatings industry has been very hard hit by high interest rates which directly affect such industries as automotive, appliances and housing—industries which are among the largest coatings' markets.

But the slowdown in those industries is not the sole reason for the sharp drop in shipments. Manufacturing activity, or the lack of it, in virtually every segment of the metalworking industry has taken its toll on the coatings industry.

While shipments have slipped sharply, expenditures by the industry continue at a rather high rate—some of which are attributed to plant equipment, some to more efficient equipment, and some to conform to environmental and regulatory controls of one sort or another.

Environmental factors, along with energy conservation, accounted for a great flurry of activity in the coatings field. Much of this activity is directly attributable to the paint companies themselves, particularly the larger producers. But much of it stems, too, from the suppliers of raw materials to the coatings producers. And much development work in the application of coating materials has been done by equipment producers. Water-base coatings and high-solids coatings are getting a great deal of attention as just two of the ways to reduce solvent emissions.

Rising energy costs have also sparked enormous activity by way of changing formulations, in application methods, and in the curing techniques. Furnace builders have worked hand-in-hand with paint producers and users to sharply reduce solvent emissions and in the development of heat recovery methods.

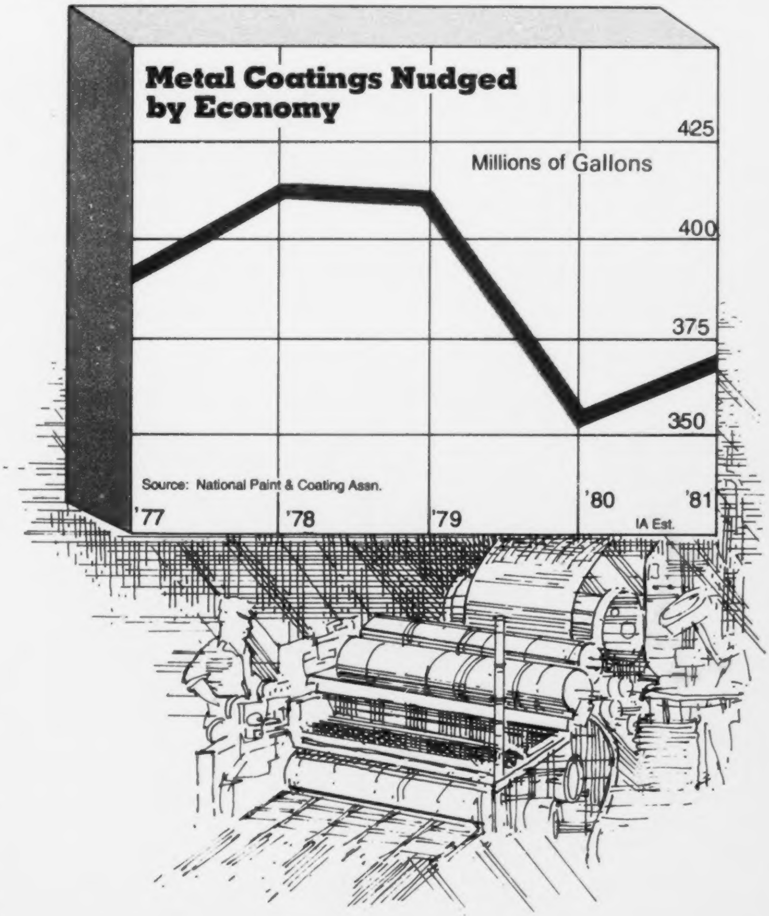
In some cases, this has been achieved by recirculating heat back for reuse in the curing process or for use in other plant areas. In other cases, the solvent vapors are being recirculated and burned in a fuel mixture, thus sharply reducing energy costs. And in still other instances, the solvents are recovered for reuse in paint formulations.

The one bright spot for the coatings industry seems to be in the emphasis that's been given to the control of corrosion of metal surfaces. With costs of products and equipment on the rise, the coatings industry has set upon corrosion control as a primary target—which, if successful, could save consumers billions upon billions of dollars. This new emphasis is being felt most in the automotive industry and in the area of marine coatings for ships and dock structures.

Exports of paints have been rising, but at a very slow rate. Also, imports have partially offset exports.

The product or industrial type coatings that are used in manufacturing account for roughly 30 pct of all paint sales, according to the Commerce Department. Industrial maintenance paints—those used for refinishing of machinery, automobiles and traffic signs—account for another 12 pct of total sales. The bulk of these shipments is produced by the larger paint companies.

Improvements in plant efficiency and the need to cut costs as production expenses have risen have resulted in slightly decreased employment throughout the industry.


Metal Coatings Nudged by Economy

Source: National Paint & Coating Assn.

Mining Equipment

"We're terrifically enthused about Mr. Reagan's stated beliefs about using more of our own resources like coal and shale oil," says one mining industry engineer. "We've got so much and we can so very efficiently, and I mean without great environmental damage, extract it," he adds.

Others in the industry express similar optimism about mining during the upcoming Reagan years. "We've heard such silly things for years," says another. "We've got enough coal to power our economy for centuries; enough oil to tell the Arabs to go fly a camel. But the environmental movement and the general mess about government regulations—at all levels—has stymied the industry at home.

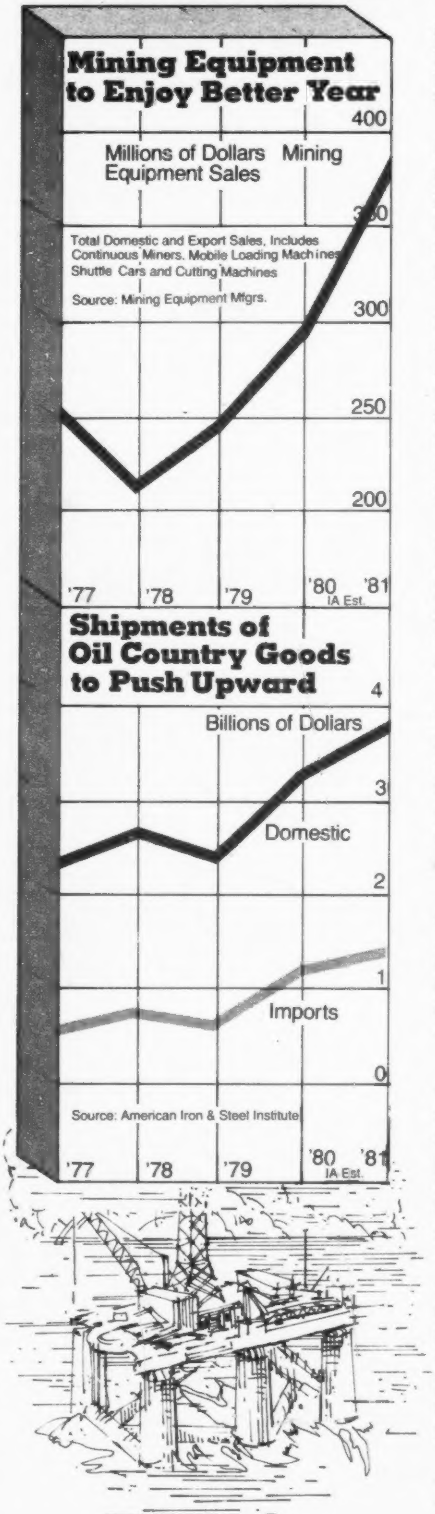
Frankly," he adds, "we've found so many more reasons to consider foreign mining ventures and other countries' mining equipment markets that I feel looking here at home again is going to be downright odd."

Mining equipment makers also see 1981 as a year when order books for their machinery will fatten both in terms of domestic business and abroad. "The coal industry in particular," says one, "is probably going to enter into a boom period. I'm sure of that and partly I'm sure of it because of Mr. Reagan's election. I'm also sure of it because of the new Congress," he adds.

Many mining equipment executives pointed this out to *Iron Age*. It's not just the change in Administrations that means good or great business for mining. It's the Congress. "That new bunch in there," says one, "is not the Jane Fonda fan club. They are not against exploitation. In fact, they're about as pro-business a bunch as I've ever seen in Washington. For us, that's just fine."

The industry's expectations for 1981 are great enough. "I don't see any really bad news on the horizon for us," says one mining machinery maker. "I expect 1981 will be one of the best years we've had in decades. And I don't mind at all saying that I think that because of the change in Washington."

Already there's the boom in the West in coal, uranium and other minerals. Suffice it to say that President-elect Reagan won a big victory in the West by coming out strongly in favor of development and use of what the U.S. has in the Rockies.



Mining Equipment to Enjoy Better Year

Shipments of Oil Country Goods to Push Upward

Oil Country Equipment

Producers of "oil country" tubular goods—the casing, tubing and drill pipe used in oil and gas wells—are predicting a "very strong" market for their products in 1981.

But the market may, in fact, be a little too strong. The oil companies' demand for tubular products is currently outstripping supply. Domestic production is estimated at 3.4 million tons of tube while demand is about 4 million tons.

Most producers already report they are booked through the first quarter. "The quarter is virtually closed," remarked one major tubing manufacturer. This is forcing U.S. suppliers and distributors to turn to foreign suppliers, who already have a 25 pct to 30 pct share of the domestic tubular market.

One domestic distributor, who already received his first quarter allocation from the domestic mills, says he is now working with three to four foreign sources. "I intend to sell everything I can get my hands on," he adds.

The sharp rise in the demand for tubular goods is the result of the largest oil and gas exploration boom seen in 25 years. Unfortunately, though, the exploding market for tubular goods caught many within the U.S. steel industry off-guard and they are now trying to catch up.

The fourth quarter saw several domestic steel companies, including Armco Inc., U. S. Steel Corp., and CF&I Corp., a subsidiary of Crane Co., announce plans to build new tubular mills. But these new mills won't be on stream until 1983.

This creates a problem for oil companies that need tubular goods now. They are relying on foreign suppliers, particularly the Japanese, to fill the U.S. gap. But even these sources could dry up, especially if China continues to step up its drilling rate.

There are a few industry insiders who believe, however, the shortage situation has been blown out of proportion. "I think supply and demand are in reasonably good balance. I expect a good strong, tight market, but no shortages," said one major tube producer.

He noted that tubing producers were caught unprepared in 1979, but their inventories now are in "pretty good shape." In addition, he said drill pipe is "readily available and can almost be bought off the shelf."

ANNUAL FORECAST

Forgings

Going by the price of shipments and not by tonnage shipped, the closed impression die forging industry, had an outstanding year in 1980.

However, the figures can be a bit misleading. Projected shipments for 1980 have been pegged at $2.5 billion, just a shade under last year's record figure of $2.6 billion.

The 1980 figures are high because the industry went into the year with heavy backlogs and saw a change in its product mix. The aerospace industry continued to spend increasing amounts of money for relatively few high-priced forgings. So, while dollars kept coming in, forging tonnage dropped considerably.

However, going into the new year, falloffs in forging purchases from the aerospace industry and other sections of the depressed economy will suddenly become visible in 1981.

At $2.5 billion, projected shipments appear gloomy for 1981, but only because of the high dollar volume which carried through much of 1980. Actually, many industry officials see a gradual increase in business through 1981, although few see much chance for growth through the first quarter.

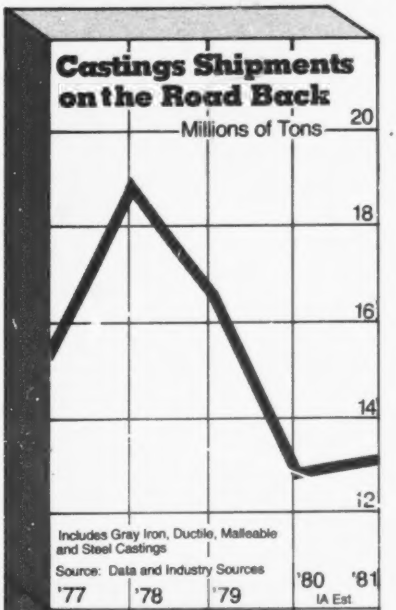
Several firms noted slight order increases during the late summer and fall months. "However, with the prime continuing to climb, customers are growing increasingly pessimistic," said one manufacturer.

Nevertheless, despite some increases in orders, the industry still has to contend with the weight of a large millstone around its neck—the automobile industry. The closed die forging industry lost some 40 pct of forging tonnage in automotive products in 1980. Since the auto industry is the forger's second biggest market, substantial recovery can only occur when more cars are produced.

Besides the automotive market, the forging industry has seen declines in orders from truck, farm machinery, and off-highway equipment manufacturers.

All business, however, is not bleak. The aerospace industry, which was the industry's leading market in 1980, should remain strong through 1981 because order backlogs remain strong.

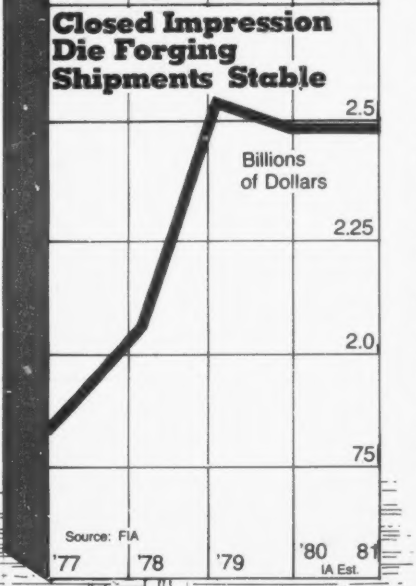
Predictions are that open die forgers will experience a slight 3.5 pct increase in shipments in 1980 over 1979 and 1981 will show an improvement of 9 pct over 1980.



Castings Shipments on the Road Back

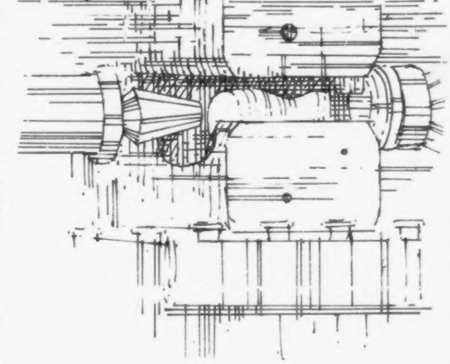
Includes Gray Iron, Ductile, Malleable and Steel Castings

Source: Data and Industry Sources



Closed Impression Die Forging Shipments Stable

Source: FIA



Castings

The foundry industry closed 1980 on a little stronger note than expected. Even with the late November rise in interest rates, it appears that fourth quarter castings shipments fell no more than 4 pct to 5 pct, or something less than the usual seasonal decline that comes at year end.

Fourth quarter shipments will fall off by 10 pct or more. That has brought estimates for total 1980 ferrous castings shipments up to over 12 million tons. It's also raised foundrymen's hopes for first quarter. Though shaken by the surge in the bank rate, they are still hoping for about a 5 pct gain in first quarter 1981 shipments over the 1980 closing quarter.

That also brings estimates for 1981 total tonnages up a little, despite the concern over the effect of high interest rates on some key castings markets like farm machinery, automobiles and construction machinery. The current estimate for 1981 is about 13 million tons, or a 5 pct gain in castings volume.

A flurry of castings orders, particularly in gray and ductile iron castings, in late November and early December seems to reflect the very low inventories of castings in consumer plants, foundrymen believe, rather than any surge of new business.

There had been a mild recovery in fourth quarter in farm equipment demand. This had been expected to continue into first quarter, because forecasts for farm income in 1981 are strong. But the advancing interest rates could kill this, so not many observers are willing to bet on anything more than a normal seasonal recovery in first quarter.

Steel castings enjoyed a stronger 1980 for a lot longer than gray iron did, but that has changed now. The steel casting business has not reflected the recent gains that are reported in gray and ductile. Aluminum and copper base castings have also come back in fourth quarter. Both faired relatively better through all of 1980 than most of the ferrous castings grades.

So foundry business has been showing some moderate gains, but not much of that is going to show up in the profit ledgers.

Like most of industry today, foundrymen still see 1981 as a year of some gains, but the bulk of these are going to come in the second half of the year.

Aircraft

Although airlines are projected to be in the market for $130 billion worth of commercial aircraft during the 1980s, 1981 does not shape up as a year of abundant orders.

Most orders which are placed will be for small- to medium-size planes. Dollar totals will be correspondingly reduced.

In the first half of 1980, only one major airline out of 10, Delta, ended up in the black. Seven out of ten major regionals made money. Although business picked up in the latter part of the year for most airlines, large amounts of capital required to rejuvenate an airliner fleet are available only at sky-high interest rates. New generation Boeing 757s sell for about $25 to $27 million each in 1980 dollars. Even an older model Boeing 737 costs $10.5 to $12 million. Since deliveries on current orders are two or three years away, escalation provisions may raise the ultimate price tags considerably.

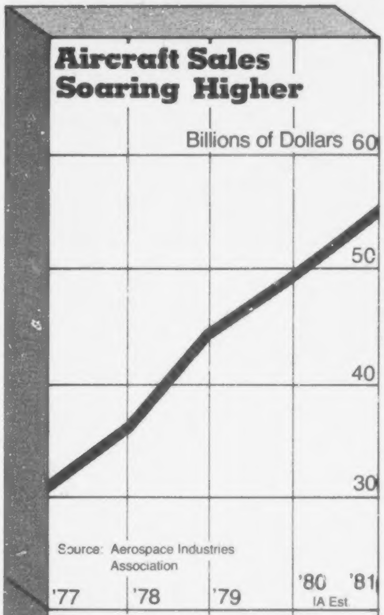
Little direct assistance can be expected from the Republican Administration. Politically, deregulation is tamper-proof. Financing of exports through the Export-Import Bank may be expected to continue to assist foreign sales. However, more than favorable payment terms seem necessary to stimulate overseas buying.

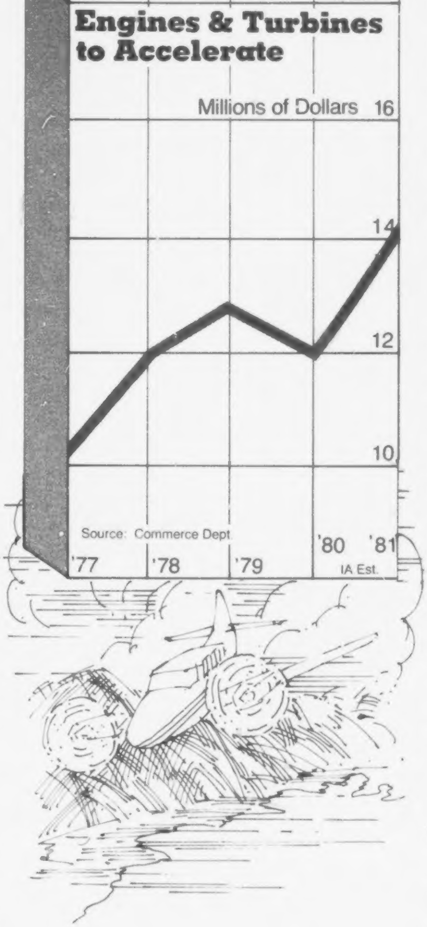
The major impact of the new administration promises to be in increased military procurement.

The full impact of military buying probably will be at least three or more years away, however.

The dominance by Boeing of the commercial transport market increasingly will be reflected in the product mix of other airliner builders, McDonnell Douglas and Lockheed. McDonnell Douglas, which reported that third quarter sales were 36 pct commercial and 64 pct government business, also said that its total backlog, a new record, was 28 pct commercial and 72 pct government. Lockheed also is showing a greater proportion of government business.

The increase in total aerospace industry sales from $45 billion in 1979 to an estimated $50.4 billion in 1980, as reported by the Aerospace Industries Association, largely reflects price escalation due to inflation. A similar inflationary increase, rather than a solid production gain, may be expected in 1981.





Engines & Turbines

The 1981 outlook for engines and turbines is as much a mixed bag as the industry's products, ranging from huge steam turbines to tiny power mower engines.

Perhaps the most interesting forecast, however, is in the diesel field, where industry may learn a new lesson in inventory management and economic forecasting.

Nowhere was the lesson of inventory learned so well in the 1974 recession as it was in the diesel engine industry. Caught with high inventories, like many other manufacturers, that downturn took a heavy toll on the bottom line for diesel makers.

A lesson was learned well, and now, the industry has kept its inventories tight, particularly tight through the latter half of 1980.

But there may be a boomerang effect, several executives and economists point out. Inventories are so low that even a small increase in retail demand will send manufacturers scrambling and result in large production backlogs. In fact, they say, it is likely to occur by the second half of 1981.

Then, they note with some happiness and some trepidation, production will go great guns.

"I think we will be in pause for the first half," says one corporate economist, "but a slow recovery in the second half, say 3 pct growth, will result in at least 23 pct growth in production because inventories are so low in the industry. They haven't been this low since 1966."

An executive in the gasoline engine field believes growth will be slow in 1981, with the beginning of the year a dismal start because of volatile interest rates. "Without some stability there," he says, "no one will go ahead on projects and retail buying will stay down."

He adds, however, that he feels the Reagan administration will have a settling effect on the economy by mid-year and the hesitancy on the part of business to invest and consumers to buy will disappear.

For the makers of large generating turbines, the picture is grim. "Utilities have recognized that peak load growth rates are down at 3 pct and are going to stay there. In addition to no demand, that new recognition adds a grim psychology to the market," says one economist in the field, predicting no growth.

Computers

"Computer shipments will top $42 billion by 1984."

"The annual growth rate for the computer graphics market will be a healthy 35 pct over the next five years."

"Use of data communications terminals will grow six-fold by 1990."

These statements from leading market research firms in the computer area indicate a strong industry—with few soft spots.

Overall, the current economic situation has minimal impact on the computer industry. It is, in the words of one leading supplier, the last business to be hit by a recession. His feeling is that "in a recessionary economy, where productivity and economy are the driving forces, most companies need to rely on computers. Scheduling, control of raw materials and production equipment are far more important now than in a free swinging economy."

In terms of numbers, shipments for this year (1981) should total in the range of $25.5 billion, up from $23.2 in 1980.

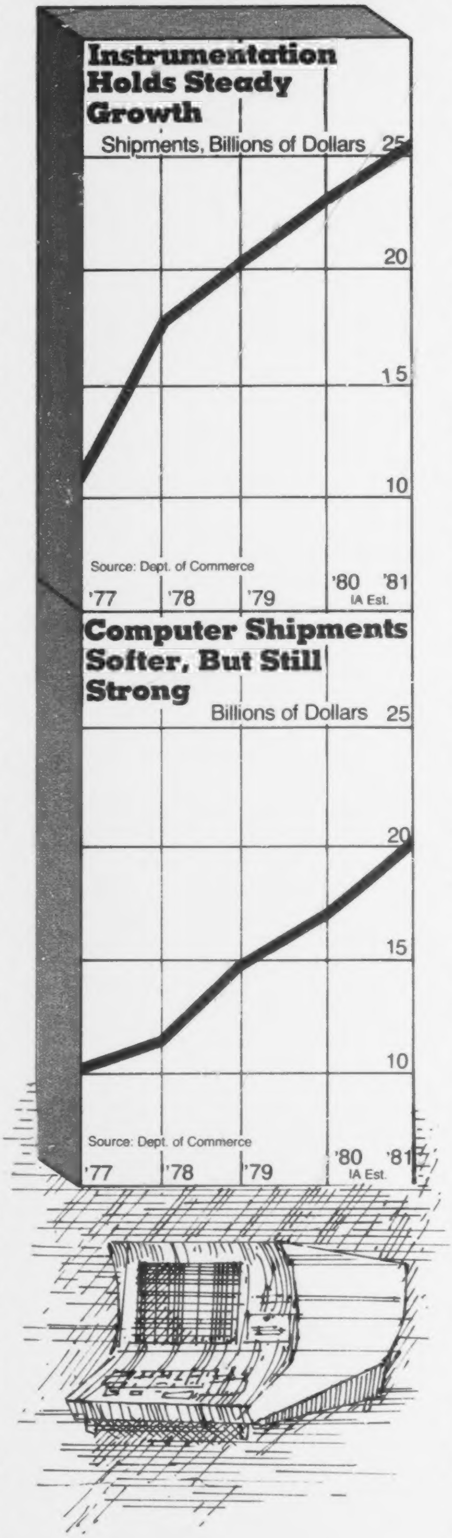
So, that's not a bad picture for an industry. Also, the traditional signposts of a recession—business dropping off, people being laid off—are not present. Some layoffs have taken place, but most are the result of supplier shortages.

One significant factor in looking at the economy today is that areas of the country engaged in high technology have not been hurt badly. The Boston, Mass. area, New England's silicon valley, has seen no real slowdown. Employment is good, businesses are growing.

How will the new Reagan Administration affect this industry? If, as many suppose, it is interested in revitalizing industry, tax credits seem a likely course of action.

The test will come in the domestic area. This year, whatever softening has occurred in those areas has been compensated for by a large increase in exports. Next year, the foreign market is expected to be soft. Therefore, the domestic market has to pick up to keep orders at a constant rate. Many sources feel this will take place.

Some computer markets will succeed no matter what. Peripherals have always been strong. Personal/small business computers are booming. One industry spokesman sums up his feelings: "The year 1981 will be strong or it will best stronger."



Instrumentation Holds Steady Growth

Source: Dept. of Commerce

Computer Shipments Softer, But Still Strong

Source: Dept. of Commerce

Instruments & Controls

The instrumentation industries fared pretty well in 1980, despite the economy. Shipments reached a total of $17.6 billion—down from the predicted $17.9, but not by much. And 1981 is projected to show a healthy increase with shipments reaching about $20.5 billion.

Assuming the change in the Administration will bring a business tax cut, this industry as well as others will benefit from it. A tax cut has been factored into the econometric planning done by the Department of Commerce.

Specifically how the instrumentation industries will be affected by the new Administration is difficult to predict. Some sources feel the effect will be mixed.

Defense related product lines will experience a significant increase. On the other hand, if President Reagan takes a very conservative stand on environmental legislation, the industries which supply these controls may hurt a bit.

Some sources expect a two-troughed recession which may not end until late in 1981. Should this occur, all industries will be slower. Defense related industries will still be insulated however.

On the positive side, if business tax cuts are enacted, there will surely be more spending for automation. This will boost business in electronic components.

Energy will have an effect on instruments and controls for the commercial and residential market. The industrial market will be strong, also, but how strong depends on the government position on regulation.

The segment of the instrumentation industries which most affects the metalworking industries is measuring and controlling instruments. This group accounted for about $7.1 billion in shipments in 1980. It is expected to hit $8.2 billion in 1981.

In this group, controls relating to nuclear technology should grow; those geared to the chemical industries may soften. Avionics is sure to be a significant growth area.

Overall, the trend toward automation will not reverse. More instrumentation is assured. Only the timetable is in question. If the Federal government softens its line on regulations, shipments of some controls may flatten. But the overriding need for more productivity will keep the control market strong.

Fasteners

"If President Reagan believes what he says, I'd say we're on our way to rejuvenation—maybe," says one president of a bolt and nut company. "But, so much of the standard business is already overseas, I can't say I'm waiting for some kind of world as it was," he adds.

Some of the "standards," those familiar nuts and bolts that hold so much of the world together, are largely an imported item in the U.S. That fact coupled with the slump in automotive in 1980 left many U.S. fastener makers in America on the verge of despair.

"For years now, this industry has been emigrating to other countries, particularly Asian countries. You look at a bolt today or a nut and chances are disgustingly good that it wasn't made here," says one industry observer. "Just what President Reagan can do about that I don't know."

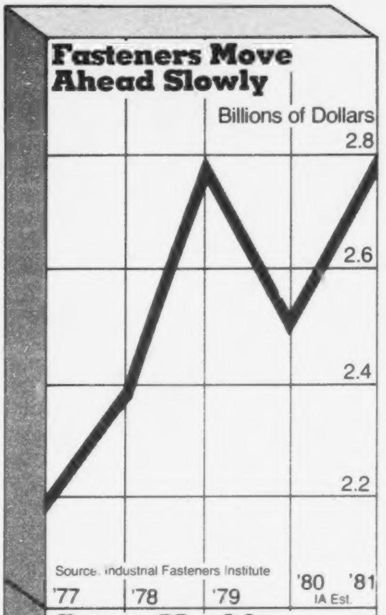
Others in the industry agree. "So much of our nut and bolt business has passed from our hands," says another.

Can it ever return? "Yes," says one industry leader, "If President Reagan intends to rebuild our defense system, one thing he'll find is our ready capacity at home in terms of standards, but some of the more sophisticated products have shrunk to a scary level."

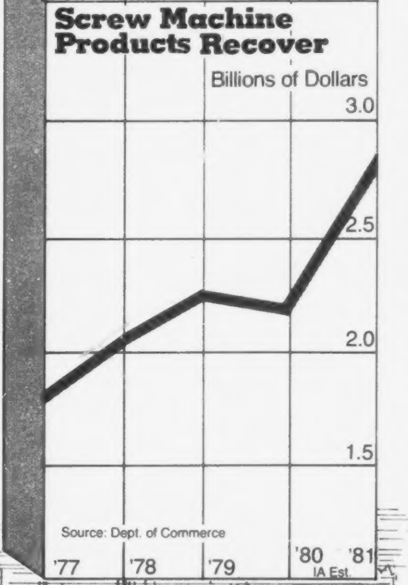
But, almost all companies in the business say given enough lead time and no serious materials shortages, the domestic mechanical fastener industry could handle any Pentagon demand. "The lead times would, naturally, have to be in months," says one.

Some fastener makers are also heavily dependent, in some product lines, on automotive. "When they're up, we're up. When they're down, we golf," notes one. "I hope they're up in '81. If they're not, I can tell you it couldn't be much worse than it was in the Summer of 1980," he adds.

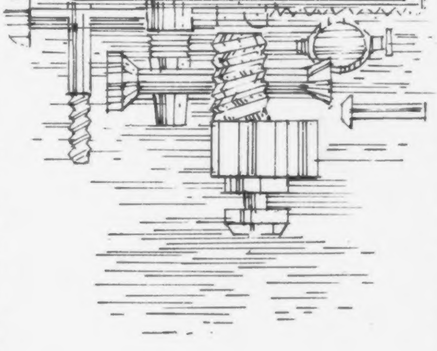
Summer of 1980, in the U.S. fastener industry, was 1929 revisited. Summer of 1981? "In general, that includes the whole mechanical fastener industry, I'd say we'll see a very good year, even if automotive is not in happy days again," predicts one standards maker. "It couldn't be worse than 1980 and with the changes in Washington I expect total industry sales to show perhaps a 20 pct rise, adjusted for inflation, in 1980."


Fasteners Move Ahead Slowly

Source: Industrial Fasteners Institute


Screw Machine Products Recover

Source: Dept. of Commerce



Screw Machine Products

The screw machine products industry, despite sales increases during August, September and October, is resigning itself to a flattening out during the remainder of the fourth quarter.

And industry officials are being conservative about predicting sales gains in 1981. Six months ago they saw a gradual pickup through 1981. Now they still see some recovery, but at a frustratingly slow pace.

"I think that one of the disheartening things is that the automotive industry has not turned around like we thought it would," said one industry spokesman.

"Generally, we see industry growth falling somewhere between 1979 and 1980 figures," reported another official. "It will be better than 1980 but less than 1979.

Most see a slow recovery. Although sales of screw machine products increased through the third and early fourth quarter, new orders were not keeping up with the increases. In addition, soaring interest rates are worrying manufacturers. Some see interest rates reaching 23 and even 25 pct before they begin to drop.

"Despite increased interest rates, expansion programs have been planned in advance and appear to be still moving ahead," said an industry spokesman. "We are still seeing companies moving into new facilities and looking at new equipment."

Screw machine product manufacturers (outside of some companies that primarily supply the electronics and aerospace industry) are being hurt not only from the automobile slump but all across the board. Sales to the plumbing industry, to farm and off-highway equipment manufacturers, and to leisure product builders, to name a few, are way down. Several screw machine product firms have indicated that sales through 1980 are down more than 20 pct compared to 1979. "People just aren't spending," said one manufacturer.

There is some optimism for 1980, but few see business picking up in the first quarter. "There are a few signs of increased activity in the first quarter but I am not counting on it," explained one executive. "But who knows? With the new administration coming into Washington, maybe there will be a change in the business climate."

Welding

Predictions in the welding industry are becoming harder to estimate all the time. Despite an unexpected drop in sales in the middle of April and another one in mid-November, welding still had its best year ever in 1980. Including traffic in cylinders, 1980 sales hit $3.6 billion.

The fourth quarter came through fairly strong, thanks to a very big October.

The October jump in sales was followed by two more strong weeks in November, but then the prime rate started up again and activity fell back to where it had been in August. September, incidentally, was also a good month for welding.

Distributor sales set a new record in October (a 152.8 index), surpassing the previous record of 151.5 established in April 1980. In this index, a figure of 100 represents $200,000 in sales. The statistics are provided by a scientifically selected group of welding distributors and are put together by the National Welding Supply Association, Philadelphia.

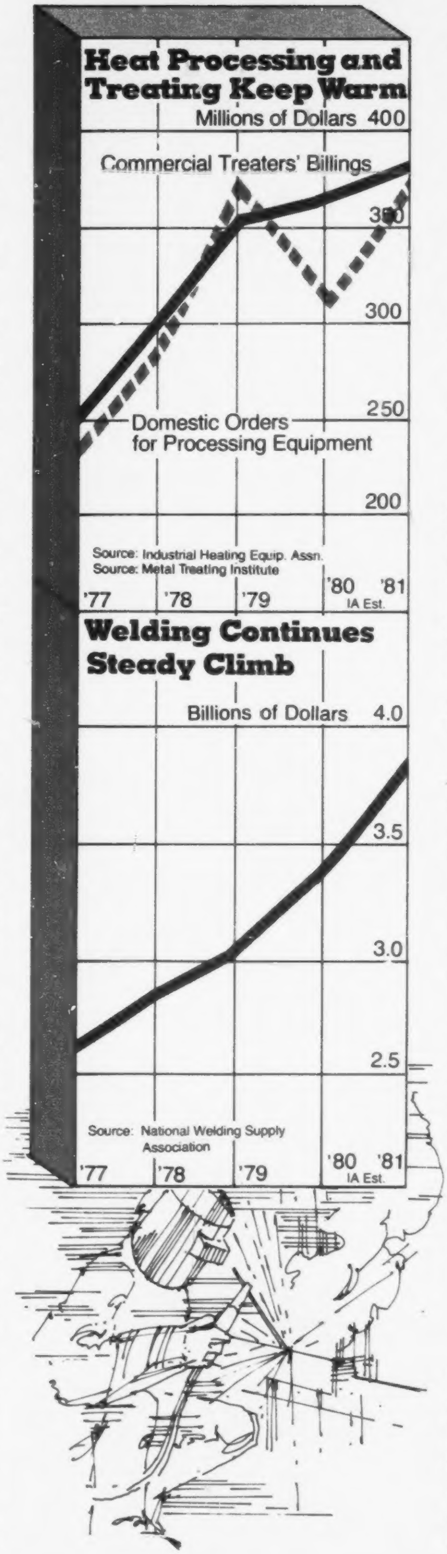
The welding industry is not so dependent on the automobile as are other metalworking industries. Still, any weakness in autos is bound to be felt in welding.

No industry is recession-proof, but welding comes close to being one because users of welding frequently resort to maintenance work when business is slow.

There has been strong activity in powerplant construction, heavy equipment and machine tools, and welding is widely used in all of these areas. The oil and gas industries are humming as well. A big new job there is the fabrication of reactors to desulfurize heavy crudes.

Looking ahead, there is fear of a recession. Says one executive: "Unless the new administration can curb inflation before the spring thaw, we could be in real trouble in 1981." There is still a gut feeling that 1981 will turn out all right after all. We see the welding industry having a 10 pct growth in dollar sales.

Despite aberrations in the economy, welding has shown good, steady growth. All of this has been accomplished without much construction for the new energy industry. That will be a bonanza for welding.



Heat Treatment

The industrial heat processing industry started 1980 on an optimistic note, then in mid-year changed its tune to cautious and ended the year by echoing its concern over the national economy.

The first quarter showed sharp gains over the records set the previous year, then tapered off somewhat as the year wore on and slipped sharply by the third quarter. At that point, domestic orders for industrial heating equipment had dropped by 29 pct over the same third quarter period of the year before. The nine-month totals had decreased by 7 pct and the year-end totals are expected to settle out with a loss of slightly over 8 pct.

Despite the slippage in the latter part of 1980, most builders of industrial heating equipment expect orders to increase during 1981. The average increase is expected to be 16 pct while the median increase is pegged at 12 pct. About 20 pct of those builders contacted thought their orders would continue on a downward trend and an equal number foresee no change from 1980.

The builders are approaching 1981 with guarded optimism. They look for little or no change in the first half of 1981 but expect the second half to show some strong gains.

The slippage in 1980 has been attributed to general business conditions, the tight money market, high interest rates and the costs of government regulations.

The commercial heat treaters, likewise, felt the pinch of the recession by mid-1980 when they experienced four consecutive months of declines in billings. It was not until September before the industry showed a turnaround. In spite of this, billings for the first ten months were still slightly on the downside—a decrease of 0.3 pct over the same period of 1979. Expectations are that total billings for 1980 will be on the upside, but only by a very small margin.

A mixed bag is in store for the commercial heat treaters in 1981. As to how well they will fare will depend on each company's product mix and geographical location. Those companies servicing the automotive, construction and farm equipment industries will find business in 1981 every bit as depressed as the industries they service.

ANNUAL FORECAST

Rail Cars

The nation's rail car builders shipped about 90,000 units in 1980, not much below the 95,000 shipped the year before.

On face value that looks as though 1980 was a good year for the builders but not so. The reasons: With not many new orders coming in the industry dipped heavily into its backlog to keep busy.

As a result that backlog was just about halved, dropping from 100,000 to about 60,000. And, unless there's drastic improvement in the economy in 1981 the builders expect to deliver only about 52,000 cars this year.

That would be the lowest total in five years (see chart). The year just concluded was definitely a downer for the car builders. Deliveries began the year with a fairly strong first quarter—about 24,000 being sent out to the railroads, corporate buyers or leasing companies. But the second and third quarters were weak with a slight recovery in the fourth.

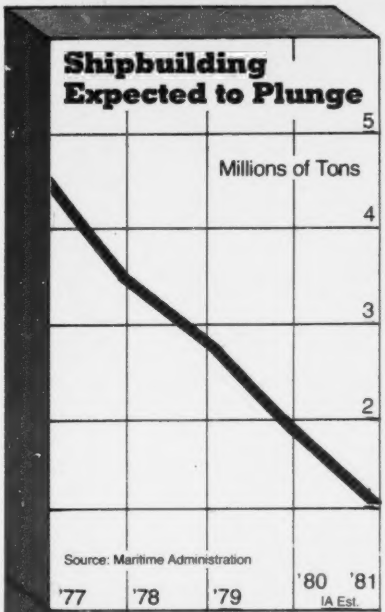
In terms of types of cars, covered hoppers are the strongest, forming about 22,000 in the total backlog of close to 60,000. Orders for tank cars and gondolas are holding up fairly well while orders for box cars are extremely anemic.

The car builders blame the present dearth of orders on the general economic weakness of the country. They point specifically to the current soaring interest rates which are doing much to restrict capital spending on new equipment.

About half the cars bought are purchased by companies and with the credit crunch all capital purchases are subject to very close scrutiny.

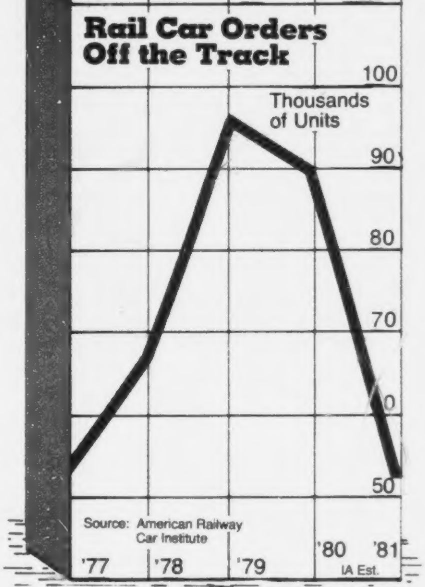
Car builders are puzzled why there is not a greater demand for cars to haul coal in the energy crunch. They can only conclude that fear of the environmentalists is discouraging more investment in coal burning facilities and in cars to haul the coal.

There is, and always has been, plenty of car body building capacity. The foundries that make the axles, wheels and other components are reluctant to expand capacity to turn out more of these components. Their reasons: Tight capital and stringent environmental regulations. As a result, the car builders continue to have to rely on imports as a source of these materials.



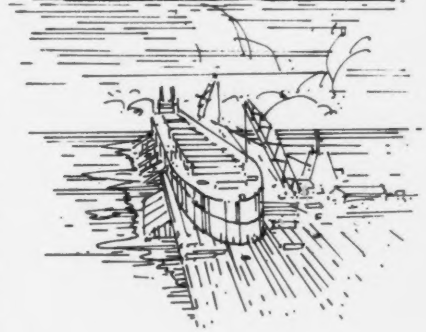
Shipbuilding Expected to Plunge

Source: Maritime Administration



Rail Car Orders Off the Track

Source: American Railway Car Institute



Shipbuilding

Shipbuilders experienced a dismal 1980 in terms of activity, but they got some good news late in the year.

That was the election of Ronald Reagan who has frequently expressed a commitment to rebuilding America's marine might—both in naval vessels and cargo carriers.

Before the election Mr. Reagan stated, "The real industrial muscle of this country is epitomized by our shipyards, and I firmly believe that a shipbuilding program is a key to our economic revitalization."

During the campaign he had espoused, among other maritime aims:

—Demonstrating America's control of the seas in the face of any challenges.

—Developing a 600-ship Navy composed of U.S.-built ships as quickly as the budget would permit.

—Putting together a comprehensive national maritime policy pointed toward greater market shares of U.S. trade for U.S.-flag, U.S.-built ships.

—And developing a merchant marine consistent with our economic, trade and national security needs.

Despite all this and Mr. Reagan's election, the best the shipbuilders can expect is a revival for their industry about 1983. Reason: The long lag between commitments to build ships and actual work on them.

"Even if we start moving on a program on Jan. 20," says a spokesman for the builders," there's a three-year time lag before the yards get involved."

So the yards will face a lean 1981, which is shared by shipbuilders across the world. Domestic shipyard employment will drop 6,000 to 10,000 this year.

Yards will keep as busy as they can on ship conversions, repairs and miscellaneous work. According to industry authorities there are, at present, just a couple of proposals floating around for oil tankers and petroleum product carriers.

Domestic shipyards have also kept busy by building offshore oil drilling rigs. But overseas shipyards are now getting into this market to keep their workers occupied and that segment of activity is described as "very competitive."

One interesting development in the domestic industry is a direct result of the energy crisis. It's bringing back the use of coal as a fuel for ocean-going vessels.

Bearings

Although hit hard by the slumps in the automotive, farm equipment and construction equipment industries, the bearing industry in general has suffered less than a number of other industries this year.

For one thing, the industry can stay afloat on aftermarket sales, when orders from OEM manufacturers drop off. For another, the bearing industry often feels a recession later than other segments of the economy.

"Except for a few companies hit very hard after the first quarter of 1980, many companies have held up rather well until recently," explained an industry spokesman.

However, the firms that are tied to the automotive and other depressed industries, have been hurt and are less optimistic about 1981 than they were six months ago. Few see much improvement before the second half of 1981.

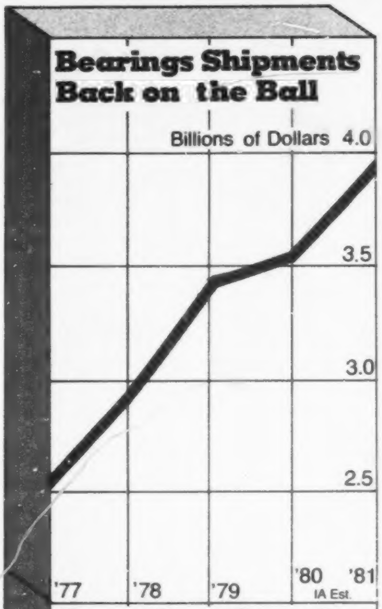
"Many of us expected to see more sales in the automotive sector by this time," explained one manufacturer. "However, now we are resigned to a very slow recovery by the industry through 1981."

Besides the lack of auto production, firms are being hurt by changes in the types of bearings being used in cars. "The significant change is that in General Motors X-body cars, the front wheel bearings, which had been tapered roller bearings, are now ball bearings of a special type," explained one spokesman.

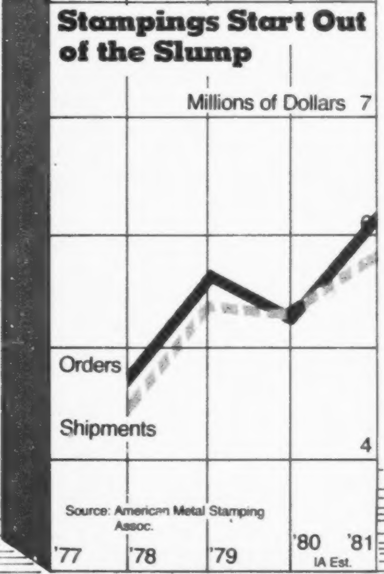
Other firms, however, benefit from the automotive changes. "The change to down-sized cars has not been all bad," said another official, "for manufacturers have not only switched from roller to ball in some instances but have also changed from the old sleeve-type to antifriction bearings."

Although automotive accounts for 25 pct of sales (20 pct to OEM manufacturers and 5 pct to the aftermarket), some markets remain strong. "The heavy equipment industries such as mining and oil drilling are still buying and the air frame industry has remained a consistent user of bearings," reported a manufacturer.

On the whole, however, because bearing manufacturers entered the recession late, they don't see significant recovery coming until late in 1981.

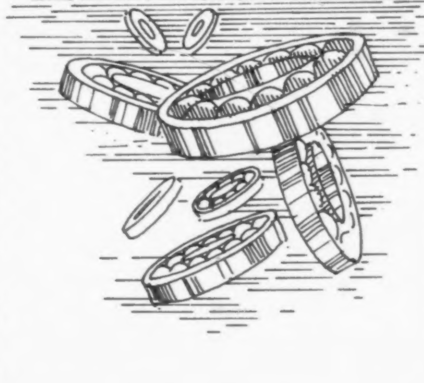


Bearings Shipments Back on the Ball



Stampings Start Out of the Slump

Source: American Metal Stamping Assoc.



Stampings

Stampers have been down so long, it's starting to look like up.

1980 has not been a kind year to metal stampers, particularly those unfortunate enough to be concentrated in automotive markets. As Detroit goes, so goes their business.

"Most of us took a pretty good beating this year," says one Midwestern stamper, hard hit by the automotive downturn. Automotive stampers in 1980 were hit with a combination punch of both fewer cars being produced and smaller cars predominating.

Stampers selling to Detroit by the pound, not the unit, found their sales in pounds per car lower in the 1980 models combining with the automakers' demand for fewer cars.

"I think they're pulling out of it pretty well," says a California stamper who admits he still will show a profit. "The diversified houses weren't as hard hit," he says.

"But these interest rates have raised hell with people," says another Midwesterner. "It all goes back to people buying something, whether it's a car, an appliance or a house. We all thought we depended on Detroit, but I think it's a combination of everything."

American stampers claim 30 pct of their markets have been eroded by imports regardless of the recession and most say profit margins on what sales are left have been reduced as well.

None would predict any strong growth in the first quarter for 1981. The most optimistic says he's looking for 12 pct growth in the second quarter, but even that, he adds, will leave him below 1979 levels.

The stampers seem to be decidedly pessimistic about 1981, saying they foresee growth, except in automotive markets, in the second half of the year. But that growth, they note, will still leave them at sales and profits below pre-recession levels.

"There has to be some impetus in the market right now," says one company president. "If (President) Reagan can give people their confidence back, then the market will start moving forward. Now, we've been whipped by inflation and whipped by interest and people just don't know what to do, even if they have the money to spend.

"We're gonna make it," he concludes, "but darn, it's going to be slow."

Valves

The valve industry expects to take another good turn for the better this year, thanks in part to the increased activity in the oil field and anticipated capital spending projects by the refineries and chemical processing industries.

The increased domestic drilling means a steady demand for valves for the pipelines that gather gas and those that carry crude oil to refineries.

At the refineries, a two-pronged push is increasing the demand for specialty valves. One is the changeover to produce more lead-free gasoline.

The other is a demand for valves to handle the heavier sour crudes that the foreign oil producers are now requiring the major oil companies to buy.

"We optimistic," says one valve executive, "the push to decontrol oil and gas prices, the domestic drilling activity and the change in administrations in Washington are good omens for us."

Another executive reports that his firm plans to expand its facilities this year to meet the increased demand for valves and actuators. The latter has been a strong growth area for many in the industry in recent years.

But while the oil and gas segment of the market looks strong for the this year, the nuclear business remains a question mark for many of the industry's members.

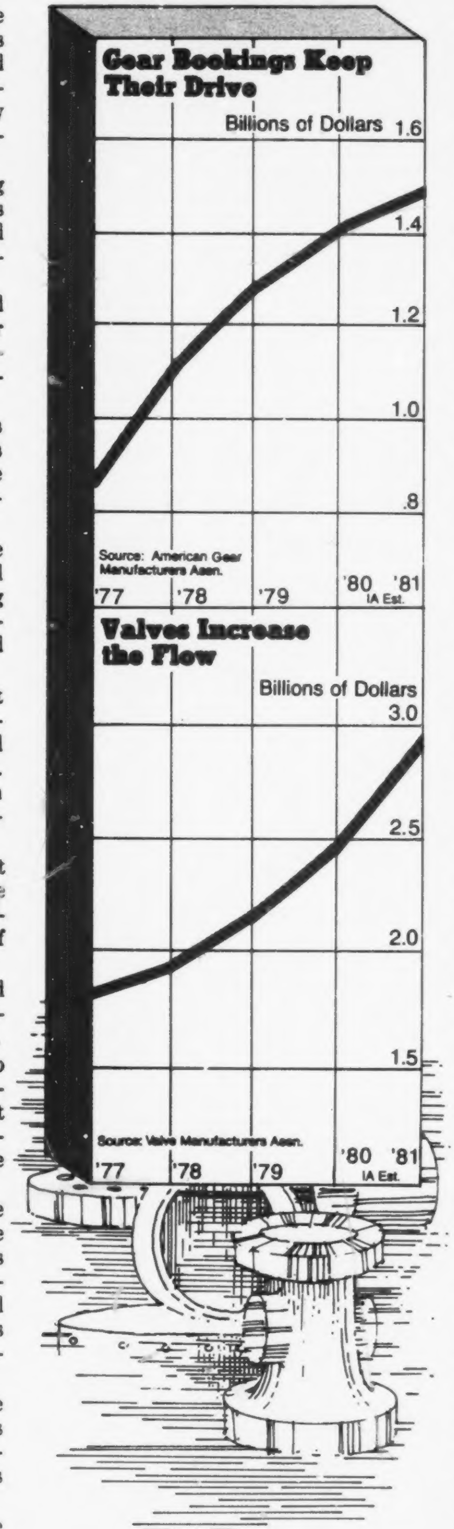
"The shadow of Three Mile Island still hangs over our end of the business," says one industry spokesman.

"The utility industry is starting to show some signs of life in this country," says another, "but the best bet for this year is still overseas, particularly in the nuclear end of the market."

Synfuels is another area of the valve market which has drawn the interest of many, although it has yet to produce any measureable results in terms of orders. The big coal gasification and liquefaction plants will require more than a few specialty valves.

"It's still pretty much on the drawing boards at this point," says one industry manager, "I don't foresee much activity in that area this year.

"But," he adds, "from what I have seen, they'll need a lot of valves in each of those plants."



Gear Bookings Keep Their Drive

Source: American Gear Manufacturers Assn.

Valves Increase the Flow

Source: Valve Manufacturers Assn.

Gears

The gear industry had a lot more than most to be thankful for in 1980—it wasn't hit nearly as hard as other industries struck down by the recession. If some sectors of the gear market haven't been up to par, there have been several strong markets which have saved the day.

Energy is the key for the gear makers in the future. Energy-related growth will be the life preserver for gear manufacturers who have seen the automotive and construction markets fade away.

A Texas gear maker was quite optimistic about 1981 after recently experiencing a record year for oil field pump equipment. "We are looking forward to a bumper crop. The recession didn't hit us too much," he comments.

He looks for a domestic pickup in oil field goods to boost the gear makers.

A Midwestern gear manufacturer spokesman whose firm produces large, heavy duty industrial drives and couplings says that his company's business hit a plateau during 1980. He notes that "continuing large, important demand for our product has offset the lack of purchases by other industries."

He sees plenty of opportunity as more and more firms that use heat for processing convert to coal. He says this change has meant a lot to those in the power transmission business.

Coal transportation, coal treatment and coal export will "mean great opportunities for heavy duty power transmission drive machinery," he says.

The capital investment programs planned by the domestic automakers to implement small car production has also meant "substantial business for the power transmission business," remarks the Midwesterner.

The gear makers are, in a word, "hopeful" about the New Administration headed our way.

There was also some caution in the air with one spokesman saying "we still have another half a recession to look at. Interest rates will go over 20 pct. People don't seem to realize what a detriment that is to industry."

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ANNUAL STATISTICAL REVIEW

Metal Prices and Production as of December 31, 1980

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Steel Production

World Steel Production

Raw steel, thousands of metric tons

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Argentina	1,823	1,915	2,151	2,205	2,353	2,208	2,410	2,684	2,786	3,199	2,700
Australia	6,839	6,753	6,751	7,699	7,813	7,869	7,794	7,338	7,596	8,119	7,500
Austria	4,079	3,960	4,069	4,238	4,699	4,069	4,476	4,093	4,335	4,917	4,700
Belgium	12,607	12,445	14,532	15,522	16,227	11,582	12,145	11,256	12,601	13,442	12,400
Brazil	5,390	5,997	6,518	7,150	7,515	8,387	9,253	11,253	12,205	13,893	15,400
Bulgaria	1,800	1,948	2,121	2,246	2,188	2,265	2,460	2,589	2,469	2,482	2,500
Canada	11,200	11,040	11,863	13,388	13,623	13,025	13,290	13,631	14,899	16,078	16,000
China*	18,000	21,000	23,000	26,000	26,000	26,000	21,000	23,700	31,780	34,430	35,000
Czechoslovakia	11,480	12,069	12,728	13,158	13,640	14,324	14,693	15,054	15,294	14,817	15,000
France	23,774	22,843	24,054	25,270	27,021	21,531	23,227	22,094	22,844	23,380	23,500
W. Germany	45,041	40,313	43,705	49,521	53,232	40,412	42,413	38,984	41,253	46,040	43,500
E. Germany	5,425	5,745	6,065	5,855	6,165	6,480	6,740	6,850	6,976	7,024	7,000
Hungary	3,110	3,110	3,273	3,332	3,466	3,671	3,652	3,723	3,773	3,907	4,000
India	6,276	6,101	6,856	6,889	7,068	7,991	9,364	10,009	10,099	10,126	9,500
Italy	17,277	17,452	19,813	20,995	23,804	21,865	23,455	23,335	24,283	24,250	27,000
Japan	93,322	88,557	96,900	119,322	117,131	102,313	107,399	102,405	102,105	111,748	112,000
N. Korea*	2,180	2,360	2,500	2,900	3,200	2,900	3,000	4,000	5,080	5,300	5,500
S. Korea	481	472	586	1,157	1,947	1,994	3,515	4,347	4,969	7,610	8,500
Luxembourg	5,462	5,241	5,457	5,924	6,447	4,624	4,565	4,329	4,790	4,949	4,700
Mexico	3,881	3,821	4,431	4,760	5,138	5,272	5,298	5,601	6,711	7,005	7,000
Netherlands	5,042	5,083	5,585	5,623	5,837	4,817	5,178	4,923	5,583	5,806	5,400
Poland	11,750	12,688	13,424	14,057	14,556	15,007	15,640	17,841	19,251	19,218	20,100
Rumania	6,517	6,803	7,401	8,161	8,840	9,549	10,970	11,457	11,780	12,909	13,500
South Africa	4,757	4,881	5,337	5,722	5,839	6,831	7,106	7,295	7,902	8,876	8,900
Spain	7,394	8,025	9,526	10,800	11,502	11,102	10,982	11,169	11,339	12,248	12,600
Sweden	5,497	5,271	5,257	5,663	5,988	5,611	5,139	3,968	4,327	4,700	4,200
U.K.	27,833	24,219	25,431	26,667	22,384	19,773	22,396	20,467	20,367	21,523	11,200
U.S.S.R.	115,886	120,637	125,589	131,481	136,200	141,325	144,805	146,655	151,400	149,087	150,000
U.S.	119,307	109,264	120,874	136,902	132,195	105,816	116,120	113,700	124,002	123,276	101,000
Yugoslavia	2,228	2,453	2,588	2,676	2,836	2,916	2,751	3,182	3,456	3,536	3,600
Others	9,752	10,058	10,971	13,061	14,071	14,081	15,683	16,117	19,236	23,910	24,700
Total	595,410	582,524	630,247	698,344	708,925	645,610	676,765	674,040	715,334	747,784	718,700

* Estimates. Source: International Iron and Steel Institute.

U.S. Yearly Raw Steel Production†

Net Tons

	Openhearth		Basic Oxygen Process		Bessemer**		Electric*		
	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Production	Percent of Total Output	Total Production
195	86,262,56	89.1	....	......	4,534,558	4.7	6,039,008	6.2	96,836,075
195	93,166,51	88.6	....	......	4,890,946	4.6	7,142,384	6.8	105,199,848
195	82,846,43	88.9	....	......	3,523,677	3.8	6,797,923	7.3	93,168,039
1953	100,473,823	90.0	....	......	3,855,705	3.5	7,280,191	6.5	111,609,719
1954	80,327,494	91.0	....	......	2,584,104	2.9	5,436,054	6.1	88,311,652
1955	105,359,417	90.0	307,279	.....	3,319,517	2.8	8,049,872	7.2	117,036,085
1956	102,840,585	89.2	506,338	.....	3,227,997	2.8	8,641,229	8.0	115,216,149
1957	101,657,776	90.2	611,508	.....	2,475,138	2.2	7,970,574	7.6	112,714,996
1958	75,879,394	89.0	1,323,361	1.5	1,395,985	1.6	6,656,145	7.9	85,254,885
1959	81,668,997	87.3	1,864,338	2.0	1,380,283	1.5	8,532,514	9.2	93,446,132
1960	96,367,506	87.0	3,346,150	3.3	1,189,196	1.5	8,378,743	9.2	99,281,601
1961	84,502,071	86.2	3,967,158	4.0	881,060	.89	8,664,203	8.9	98,014,492
1962	82,957,318	84.8	5,552,697	5.2	804,964	.8	9,012,806	9.2	98,327,785
1963	88,833,925	81.3	8,544,078	7.8	962,659	.9	10,920,287	10.0	109,260,949
1964	98,097,499	77.2	15,442,186	12.2	857,586	0.6	12,678,496	10.0	127,075,767
1965	94,193,225	71.7	22,878,605	17.4	585,965	0.4	13,803,806	10.5	131,461,601
1966	85,024,572	63.4	33,928,374	25.4	278,119	0.2	14,870,363	11.0	134,101,428
1967	70,690,028	55.6	41,434,350	32.5	**	**	15,088,545	11.9	127,212,923
1968	65,836,000	50.1	48,812,000	37.2	**	**	16,814,000	12.7	131,462,000
1969	60,894,041	43.1	60,235,671	42.7	**	**	20,131,950	14.2	141,261,662
1970	48,022,000	36.6	63,330,000	48.2	**	**	20,162,000	15.2	131,514,000
1971	35,559,000	29.5	63,943,000	53.1	**	**	20,941,000	17.4	120,443,000
1972	34,936,000	26.2	74,584,000	56.0	**	**	23,721,000	17.8	133,241,000
1973	39,780,000	26.4	83,260,000	55.2	**	**	27,759,000	18.4	150,799,000
1974	35,499,000	24.3	81,552,000	56.0	**	**	28,669,000	19.7	145,720,000
1975	22,161,000	19.1	71,801,000	61.5	**	**	22,680,000	19.4	116,642,000
1976	23,470,000	18.3	79,918,000	62.4	**	**	24,612,000	19.3	128,000,000
1977	20,043,000	16.0	77,408,000	61.8	....	....	27,882,000	22.2	125,333,000
1978	21,310,000	15.5	83,484,000	61.0	....	....	32,287,000	23.5	137,031,000
1979	19,158,000	14.0	83,256,000	61.0	....	....	33,927,000	23.0	136,341,000
1980††	....	......	....	......	....	....	....	......	110,000,000*

Includes very small tonnages of crucible steel. †† IRON AGE estimate. Source: American Iron & Steel Institute.
** Included in openhearth since 1966. † Steel in first solid state after melting suitable for further processing or sale, including ingots, steel castings and strand or pressure cast blooms, billets, slabs, or other product forms.

Steel Production, continued

U.S. Raw Steel Production

Rate of Capability Utilization

	1962†	1963	1964	1965	1966††	1967
Jan.	125.5	101.7	115.5	143.4	97.9	98.4
Feb.	130.1	110.3	122.9	145.8	105.0	102.9
Mar.	128.3	122.2	127.2	149.7	111.8	101.5
Apr.	115.7	134.0	132.3	149.9	110.6	99.0
May	91.3	139.3	134.1	145.6	112.8	97.9
June	83.8	129.8	127.6	145.2	109.1	91.6
July	74.8	104.9	122.5	140.0	99.9	89.0
Aug.	86.0	94.3	127.5	137.3	102.7	95.3
Sept.	90.8	98.4	133.6	124.6	107.9	99.8
Oct.	94.3	102.8	140.2	112.7	106.5	103.4
Nov.	98.3	106.3	141.4	110.5	104.1	108.1
Dec.	97.9	106.1	140.7	116.7	96.6	110.6
Average	101.2	112.5	130.5	135.3	105.4	100.0

	1968	1969	1970	1971	1972	1973	1974
Jan.	111.2	102.6	104.1	104.3	92.6	114.5	117.8
Feb.	116.7	111.8	107.6	111.4	98.7	119.1	118.8
Mar.	117.7	114.8	110.0	117.0	107.3	121.1	118.1
Apr.	119.1	116.1	108.9	120.2	110.8	122.3	119.0
May	117.5	114.4	107.1	119.6	110.5	121.9	118.0
June	113.9	113.0	108.3	109.9	105.0	119.4	116.5
July	106.0	105.2	99.8	92.0	95.7	113.8	112.5
Aug.	82.9	105.7	99.6	53.4	100.4	112.7	109.6
Sept.	77.3	110.2	102.6	73.4	104.4	117.0	113.3
Oct.	83.4	114.1	99.0	76.0	107.9	119.2	116.8
Nov.	91.7	114.0	95.7	77.0	109.0	120.4	111.1
Dec.	96.5	109.3	96.6	81.3	109.9	117.7	101.4
Average	103.1	111.0	103.4	94.7	104.5	118.5	114.5

	1975†††	1976	1977	1978	1979	1980
Jan.	90.4	74.4	66.8	77.[illegible]	83.5	82.7
Feb.	93.8	80.1	72.1	80.1	87.9	85.3
Mar.	93.4	85.4	81.2	83.1	94.5	88.4
Apr.	84.9	88.4	83.3	88.5	93.4	83.0
May	75.9	90.8	88.1	91.5	94.8	69.6
June	69.6	89.7	84.9	91.1	93.7	58.4
July	65.1	84.8	76.7	85.1	89.9	53.1
Aug.	67.3	82.8	77.2	86.3	86.0	54.8
Sept.	74.7	80.4	77.2	88.6	82.8	62.7
Oct.	69.0	75.8	77.7	88.1	84.4	72.2
Nov.	67.4	72.2	75.0	89.4	80.6	78.0*
Dec.	66.2	67.8	74.7	87.7	78.0	78.0*
Average	76.2	80.9	78.4	86.8	87.8	72.18*

*Estimate. †AISI Index of Production (1957-1959 = 100), operating rate by AISI in January, 1961.
††Production Index 1967 = 100, revised back to 1966 in Jan. 1971. †††Rate of Capability Utilization, begun January, 1976, revised back to January, 1975.

Source: AISI

U.S. Monthly Raw Steel† Production, Millions of Tons

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Jan.	8,837,736	10,828,231	11,008,762	6,753,912	9,317,385	12,049,404	6,416,004	10,352,748	8,390,914	9,526,000	11,830,469	10,577,000	10,633,000
Feb.	8,496,934	10,118,995	9,987,206	5,782,323	9,602,938	11,126,806	6,239,098	9,698,316	8,222,[illegible]52	9,485,359	10,865,869	10,249,000	10,041,000
Mar.	9,981,754	10,924,788	10,599,074	6,254,622	11,567,745	11,564,683	7,086,389	10,583,943	10,080,[illegible]4	10,496,987	12,346,963	12,083,000	10,963,000
Apr.	9,815,095	10,536,121	9,814,780	5,532,991	11,281,920	9,777,857	7,584,687	9,235,881	10,695,362	10,560,651	11,966,162	11,570,000	10,349,000
May.	10,328,316	10,490,376	9,782,323	6,301,159	11,600,581	8,830,472	8,980,626	7,535,506	11,489,524	11,060,357	12,012,449	12,191,000	10,577,000
June	9,746,467	9,721,436	9,391,402	7,127,480	10,907,634	7,404,873	8,551,856	6,691,785	10,365,154	10,184,634	11,593,450	11,403,000	9,576,000
July	9,100,946	1,622,163	8,908,732	6,420,405	5,227,129	6,350,924	8,091,956	6,174,187	8,653,544	10,105,609	11,550,988	10,791,000	9,620,000
Aug.	9,594,545	8,122,597	9,233,890	7,286,003	1,439,277	6,838,000	8,660,527	7,097,916	7,781,560	10,515,268	11,324,149	11,097,000	10,300,000
Sept.	9,882,325	10,422,659	8,977,906	7,610,372	1,535,017	6,458,421	8,904,000	7,251,023	7,858,009	10,668,978	9,949,355	11,280,000	10,438,000
Oct.	10,501,050	11,048,513	9,197,717	8,839,778	1,704,533	6,868,380	9,173,170	7,780,538	8,483,160	11,568,248	9,295,828	11,509,000	11,171,000
Nov.	10,247,398	10,555,500	8,392,919	8,569,318	7,267,607	6,171,940	8,745,966	7,846,057	8,488,239	11,292,070	8,822,186	10,887,000	11,299,000
Dec.	10,503,519	10,837,545	7,420,285	8,710,522	11,989,319	5,839,841	9,568,954	8,079,885	8,753,117	11,611,606	9,627,156	10,435,000	11,953,000
Total	117,036,085	115,216,149	112,714,996	85,254,885	93,446,132	99,281,601	98,014,492	98,327,785	109,260,949	127,075,767	131,461,601	134,101,000	127,213,000

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Jan.	12,014,599	11,083,447	11,242,855	11,273,740	10,001,028	12,372,882	12,726,000	11,584,190	9,834,725	9,089,254	10,301,277	11,104,826	10,700,736
Feb.	11,794,896	10,915,021	10,498,356	10,874,377	9,979,752	11,625,734	11,598,000	10,861,663	9,906,523	8,858,898	9,643,242	10,562,363	10,331,868
Mar.	12,721,053	12,400,375	11,885,581	12,645,241	11,587,946	13,088,378	12,758,000	11,980,244	11,294,279	11,049,228	11,082,593	12,575,987	11,438,944
Apr.	12,450,040	12,142,751	11,385,675	12,564,686	11,587,706	12,788,629	12,442,000	10,667,492	11,439,185	11,166,557	11,528,367	12,195,612	10,658,202
May	12,700,325	1[illegible]56,364	11,574,485	12,92[illegible]15	11,936,558	13,174,066	12,752,000	9,863,557	12,136,009	12,200,852	12,320,398	12,788,673	9,225,991
June	11,905,936	11,810,287	11,323,096	11,490,602	10,979,970	12,487,656	12,185,000	8,743,842	11,604,506	11,383,812	11,860,523	12,229,990	7,500,772
July	11,452,388	11,365,146	10,780,960	9,942,264	10,341,230	12,290,250	12,155,000	8,370,426	11,399,954	10,319,277	11,387,671	11,821,349	6,795,726
Aug.	8,955,712	11,420,995	10,764,738	5,773,736	10,842,279	12,181,330	11,837,000	8,648,260	11,128,102	10,392,460	11,549,515	11,309,493	7,018,547
Sept.	8,085,770	11,523,106	10,726,618	7,678,110	10,912,540	12,229,008	11,849,000	9,295,321	10,462,577	10,050,311	11,467,224	10,541,320	7,766,905
Oct.	9,006,237	12,323,544	10,698,720	8,211,000	11,656,841	12,875,791	12,617,045	9,213,736	10,278,000	10,442,000	12,105,000	10,809,966	9,442,103
Nov.	9,590,000	11,916,305	10,008,000	8,053,140	11,398,316	12,586,509	11,614,000	8,709,090	9,494,000	9,748,000	11,654,000	9,997,000	9,000,000*
Dec.	10,421,000	11,812,097	10,438,000	8,783,805	11,878,199	12,721,577	10,960,000	8,845,511	9,215,000	10,031,000	11,812,000	9,996,000	9,000,000*
Total	131,462,000	141,261,862	131,514,000	120,442,526	133,241,105	150,798,927	145,720,000	116,783,332	128,000,000	125,333,000	137,031,000	136,341,000	110,[illegible]*

*Estimate
†Steel in first solid state after melting suitable for further processing or sale, including ingots, steel castings and continuous or pressure cast blooms, billets, slabs, or other product forms.

Source: American Iron and Steel Institute

Steel Prices

Composite Price by Periods

Period	Cents per Pound
Oct. 6, 1975 to Oct. 27, 1975	13.692
Oct. 27, 1975 to Apr. 26, 1976	13.693
Apr. 26, 1976 to May 10, 1976	13.741
May 10, 1976 to June 1, 1976	13.930
June 1, 1976 to June 7, 1976	13.949
June 7, 1976 to June 14, 1976	14.202
June 14, 1976 to July 19, 1976	14.407
July 19, 1976 to Dec. 6, 1976	14.598
Dec. 6, 1976 to Dec. 13, 1976	14.896
Dec. 13, 1976 to June 27, 1977	15.146
June 27, 1977 to Sept. 5, 1977	15.941
Sept. 5, 1977 to Jan. 30, 1978	16.043
Jan. 30, 1978 to Feb. 27, 1978	17.301
Feb. 27, 1978 to April 3, 1978	17.393
April 3, 1978 to April 17, 1978	17.672
April 17, 1978 to July 31, 1978	17.670
July 31, 1978 to Dec. 31, 1978	18.719
Jan. 1 1979 to April 1, 1979	19.549
April 1, 1979 to May 13, 1979	19.606
May 13, 1979 to July 1, 1979	19.668
July 1, 1979 to July 9, 1979	20.095
July 9, 1979 to Oct. 1, 1979	20.311
Oct. 1, 1979 to Jan. 6, 1980	20.547
Jan. 7, 1980 to Mar. 1, 1980	21.038
Mar. 2, 1980 to Mar. 9, 1980	21.130
Mar. 10, 1980 to Mar. 31, 1980	21.180
Apr. 1, 1980 to July 6, 1980	21.739
July 7, 1980 to Oct. 4, 1980	21.736
Oct. 5, 1980 to Nov. 30, 1980	22.019
Dec. 1, 1980 to Dec. 31, 1980	22.286

The Iron Age Finished Steel Composite Price

Cents per Pound, Monthly Averages

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
January	6.196	6.196	6.196	6.368	6.368	6.368	6.445	6.545	6.794	7.263
February	6.196	6.196	6.196	6.368	6.368	6.388	6.448	6.545	6.904	7.351
March	6.196	6.196	6.196	6.368	6.368	6.383	6.448	6.545	6.961	7.434
April	6.196	6.196	6.196	6.368	6.368	6.383	6.448	6.545	6.961	7.504
May	6.196	6.196	6.279	6.368	6.368	6.383	6.448	6.545	7.042	7.560
June	6.196	6.196	6.279	6.368	6.368	6.376	6.448	6.545	7.042	7.813
July	6.196	6.196	6.279	6.368	6.368	6.376	6.448	6.545	7.125	7.813
August	6.196	6.196	6.279	6.368	6.368	6.376	6.448	6.767	7.252	7.813
September	6.196	6.196	6.279	6.368	6.368	6.433	6.485	6.767	7.252	7.813
October	6.196	6.196	6.368	6.368	6.368	6.445	6.496	6.767	7.252	7.813
November	6.196	6.196	6.368	6.368	6.368	6.445	6.496	6.538	7.252	7.813
December	6.196	6.196	6.368	6.368	6.368	6.445	6.510	6.538	7.263	7.813
Average	6.196	6.196	6.273	6.368	6.368	6.399	6.464	6.60	7.091	7.650

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
January	7.838	9.014	9.363	9.456	12.739	13.693	15.146	16.294	19.549	20.943
February	7.838	8.998	9.363	9.480	12.928	13.693	15.146	17.324	19.549	21.038
March	8.012	8.998	9.363	9.480	12.928	13.693	15.146	17.393	19.549	21.168
April	8.055	8.998	9.363	10.033	12.928	13.693	15.146	17.670	19.606	21.739
May	8.055	8.998	9.363	10.033	12.928	13.835	15.146	17.670	19.637	21.739
June	8.234	8.998	9.363	11.108	12.920	14.186	15.146	17.670	19.668	21.739
July	8.480	8.998	9.363	12.075	12.912	14.502	15.941	17.875	20.253	21.736
August	8.728	8.998	9.363	12.346	12.912	14.598	15.941	18.719	20.311	21.736
September	8.977	8.998	9.363	12.389	12.961	14.598	16.043	18.719	20.311	21.736
October	8.977	8.998	9.432	12.433	13.692	14.598	16.043	18.719	20.547	21.982
November	8.977	8.998	9.432	12.433	13.693	14.598	16.043	18.719	20.547	22.286
December	8.977	8.998	9.432	12.433	13.693	14.880	16.043	18.719	20.547	22.286
Average	8.429	8.999	9.380	11.141	13.102	14.213	15.577	17.957	20.006	21.677

ANNUAL STATISTICAL REVIEW

Tinplate

Dollars Per Base Box, Pittsburgh*

	1967*	1968	1969	1970	1971	1972	1973
Jan	$9.60	$9.85	$7.70	$7.70	$8.85	$9.35	$9.35
Feb	9.60	9.85	7.70	7.70	8.85	9.35	9.35
Mar	9.60	9.85	7.70	7.70	8.85	9.35	9.75
Apr	9.60	9.85	7.70	7.95	8.85	9.35	9.75
May	9.60	9.85	7.70	8.20	8.85	9.35	9.75
June	9.60	9.85	7.70	8.20	8.85	9.35	9.75
July	9.60	9.85	7.70	8.20	8.85	9.35	9.75
Aug	9.60	9.85	7.70	8.20	8.85	9.35	9.75
Sept	9.60	9.85	7.70	8.20	8.85	9.35	9.75
Oct	9.85	7.70*	7.70	8.85	8.85	9.35	9.75
Nov	9.85	7.70	7.70	8.85	8.85	9.35	9.75
Dec	9.85	7.70	7.70	8.85	8.85	9.35	9.75
Average	9.66	9.31	7.70	8.22	8.85	9.35	9.68

	1974	1975	1976	1977	1978	1979	1980
Jan	$9.75	$13.70	$13.70	$15.10	$17.05	$19.10	$21.93
Feb	9.75	13.70	13.70	15.10	17.05	19.27	21.93
Mar	10.15	13.70	15.10	15.75	17.80	19.27	21.93
Apr	10.15	13.70	15.10	15.75	17.80	20.57	23.31
May	10.15	13.70	15.10	15.75	18.00	20.57	23.31
June	11.30	13.70	15.10	15.75	18.00	20.57	23.31
July	11.30	13.70	15.10	15.75	18.00	20.57	23.31
Aug	11.30	13.70	15.10	15.75	18.00	20.57	23.31
Sept	11.30	13.70	15.10	17.05	18.00	20.57	23.31
Oct	11.30	13.70	15.10	17.05	19.10	21.93	23.31
Nov	13.45	13.70	15.10	17.05	19.10	21.93	23.31
Dec	13.45	13.70	15.10	17.05	19.10	21.93	23.31
Average	11.11	13.70	14.86	16.07	18.08	20.57	22.89

*1967 to Oct. 1968 Electrolytic, 50 lb.
Oct. 1968 to present—Single reduced, 75 lb.

Galvanized Sheets

At Pittsburgh, Cents Per Pound†

	1969	1970	1971	1972	1973	1974
Jan	7.975	8.20	9.35	10.875	10.525	10.80
Feb	7.975	8.50	9.35	10.525	10.525	10.80
Mar	7.975	8.50	9.35	10.525	10.525	10.80
Apr	7.975	8.50	9.35	10.525	10.525	10.80
May	7.975	8.50	9.35	10.525	10.525	12.15
June	7.975	9.35	9.35	10.525	10.525	12.15
July	7.975	9.35	10.00	10.525	10.525	14.05
Aug	8.20	9.35	10.00	10.525	10.525	14.05
Sept	8.20	9.35	10.00	10.525	10.525	14.05
Oct	8.20	9.35	10.00	10.525	10.80	14.05
Nov	8.20	9.35	10.00	10.525	10.80	14.05
Dec	8.20	9.35	10.00	10.525	10.80	14.05
Average	8.068	8.97	9.68	10.554	10.59	12.65

	1975	1976	1977	1978	1979	1980
Jan	14.05	10.80	17.40	18.60	21.95	22.85
Feb	14.05	10.80	17.40	19.80	21.95	22.85
Mar	14.05	10.80	17.40	19.80	21.95	22.85
Apr	14.05	10.80	17.40	19.80	21.95	23.80
May	14.05	12.15	17.40	20.075	21.95	23.80
June	14.05	12.15	17.40	20.075	21.95	23.80
July	14.05	14.05	18.60	20.075	21.95	23.80
Aug	14.05	14.05	18.60	20.80	22.85	23.80
Sept	14.05	14.05	18.60	20.80	22.85	23.80
Oct	15.40	14.05	18.60	20.80	22.85	23.80
Nov	15.40	14.05	18.60	20.80	22.85	23.80
Dec	15.40	14.05	18.60	20.80	22.85	23.80
Average	14.39	12.65	18.00	20.18	22.32	23.56

†Hot-Dipped, 10 ga.

Hot-Rolled Strip

At Pittsburgh, Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	5.85	6.75	7.30	8.40	8.15	8.375
Feb	6.45	6.75	7.30	8.15	8.15	8.375
Mar	6.45	6.75	7.30	8.15	8.15	8.375
Apr	6.45	6.75	7.30	8.15	8.15	8.375
May	6.45	6.75	7.30	8.15	8.15	9.50
June	6.45	7.30	7.30	8.15	8.15	9.50
July	6.45	7.30	7.75	8.15	8.15	11.00
Aug	6.75	7.30	7.75	8.15	8.15	11.00
Sept	6.75	7.30	7.75	8.15	8.15	11.00
Oct	6.75	7.30	7.75	8.15	8.375	11.00
Nov	6.75	7.30	7.75	8.15	8.375	11.00
Dec	6.75	7.30	7.75	8.15	8.375	11.00
Average	6.52	7.07	7.53	8.17	8.206	9.875

	1975	1976	1977	1978	1979	1980
Jan	11.00	11.70	13.25	14.175	16.60	17.50
Feb	11.00	11.70	13.25	14.175	16.60	17.50
Mar	11.00	11.70	13.25	14.175	16.60	17.50
Apr	11.00	11.70	13.25	14.175	16.60	18.45
May	11.00	11.70	13.25	15.275	16.60	18.45
June	11.00	11.70	13.25	15.275	16.60	18.45
July	11.00	12.45	14.175	15.275	16.60	18.45
Aug	11.00	12.45	14.175	15.80	17.50	18.45
Sept	11.00	12.45	14.175	15.80	17.50	18.45
Oct	11.70	12.45	14.175	15.80	17.50	18.45
Nov	11.70	12.45	14.175	15.80	17.50	18.45
Dec	11.70	13.25	14.175	15.80	17.50	18.45
Average	11.17	12.15	13.70	14.79	16.97	18.21

Hot-Rolled Sheets

At Pittsburgh, Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	5.25	6.75	7.50	8.60	8.35	8.55
Feb	5.25	6.95	7.50	8.35	8.35	8.55
Mar	6.45	6.95	7.50	8.35	8.35	8.55
Apr	6.45	6.95	7.50	8.35	8.35	8.55
May	6.45	6.95	7.50	8.35	8.35	9.55
June	6.45	7.50	7.50	8.35	8.35	9.55
July	6.45	7.50	7.95	8.35	8.35	11.00
Aug	6.75	7.50	7.95	8.35	8.35	11.00
Sept	6.75	7.50	7.95	8.35	8.35	11.00
Oct	6.75	7.50	7.95	8.35	8.55	11.00
Nov	6.75	7.50	7.95	8.35	8.55	11.00
Dec	6.75	7.50	7.95	8.35	8.55	11.00
Average	6.37	7.25	7.73	8.37	8.40	9.94

	1975	1976	1977	1978	1979	1980
Jan	11.00	11.70	13.25	14.175	16.60	17.50
Feb	11.00	11.70	13.25	14.175	16.60	17.50
Mar	11.00	11.70	13.25	14.175	16.60	17.50
Apr	11.00	11.70	13.25	14.175	16.60	18.45
May	11.00	11.70	13.25	15.275	16.60	18.45
June	11.00	11.70	13.25	15.275	16.60	18.45
July	11.00	12.45	14.175	15.275	16.60	18.45
Aug	11.00	12.45	14.175	15.80	17.50	18.45
Sept	11.00	12.45	14.175	15.80	17.50	18.45
Oct	11.70	12.45	14.175	15.80	17.50	18.45
Nov	11.70	12.45	14.175	15.80	17.50	18.45
Dec	11.70	13.25	14.175	15.80	17.50	18.45
Average	11.17	12.14	13.712	15.12	16.97	18.21

Cold-Rolled Sheets

At Pittsburgh, Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	7.20	7.60	8.95	9.25	10.075	10.30
Feb	7.20	7.85	8.95	10.075	10.075	10.30
Mar	7.20	7.85	8.95	10.075	10.075	10.30
Apr	7.20	7.85	8.95	10.075	10.075	10.30
May	7.20	7.85	8.95	10.075	10.075	11.30
June	7.20	8.95	8.95	10.075	10.075	11.30
July	7.20	8.95	9.55	10.075	10.075	13.00
Aug	7.60	8.95	9.55	10.075	10.075	13.00
Sept	7.60	8.95	9.55	10.075	10.075	13.00
Oct	7.60	8.95	9.55	10.075	10.30	13.00
Nov	7.60	8.95	9.55	10.075	10.30	13.00
Dec	7.60	8.95	9.55	10.075	10.30	13.00
Average	7.37	8.47	9.25	9.312	10.13	11.82

	1975	1976	1977	1978	1979	1980
Jan	13.00	13.90	15.80	16.90	19.75	20.75
Feb	13.00	13.90	15.80	16.90	19.75	20.75
Mar	13.00	13.90	15.80	16.90	19.75	20.75
Apr	13.00	13.90	15.80	16.90	19.75	21.90
May	13.00	13.90	15.80	18.175	19.75	21.90
June	13.00	13.90	15.80	18.175	19.75	21.90
July	13.00	14.80	16.90	18.175	19.75	21.90
Aug	13.00	14.80	16.90	18.80	20.75	21.90
Sept	13.00	14.80	16.90	18.80	20.75	21.90
Oct	13.90	14.80	16.90	18.80	20.75	21.90
Nov	13.90	14.80	16.90	18.80	20.75	21.90
Dec	13.90	15.80	16.90	18.80	20.75	21.90
Average	13.22	14.43	16.35	17.17	20.16	21.62

Structural Steel Shapes

At Pittsburgh, Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	6.20	6.55	6.90	8.10	8.50	8.50
Feb	6.20	6.55	6.90	8.10	8.50	8.50
Mar	6.20	6.90	7.40	8.10	8.50	9.05
Apr	6.20	6.90	7.40	8.10	8.50	9.80
May	6.20	6.90	7.40	8.10	8.50	9.80
June	6.20	6.90	7.40	8.10	8.50	9.80
July	6.55	6.90	8.10	8.10	8.50	10.80
Aug	6.55	6.90	8.10	8.10	8.50	11.30
Sept	6.55	6.90	8.10	8.10	8.50	11.30
Oct	6.55	6.90	8.10	8.10	8.50	11.30
Nov	6.55	6.90	8.10	8.10	8.50	11.30
Dec	6.55	6.90	8.10	8.10	8.50	11.30
Average	6.37	6.84	7.67	8.10	8.50	10.23

	1975	1976	1977	1978	1979	1980
Jan	11.80	12.55	13.55	14.55	17.00	18.00
Feb	11.80	12.55	13.55	14.55	17.00	18.00
Mar	11.80	12.55	13.55	14.55	17.00	18.90
Apr	11.80	12.55	13.55	14.55	17.00	18.90
May	11.80	12.55	13.55	15.725	17.15	18.90
June	11.80	12.55	13.55	15.725	17.30	18.90
July	11.80	13.55	13.55	15.725	17.30	18.90
Aug	11.80	13.55	13.55	16.25	17.30	18.90
Sept	11.80	13.55	14.55	16.25	17.30	18.90
Oct	12.55	13.55	14.55	16.25	18.00	19.90
Nov	12.55	13.55	14.55	16.25	18.00	19.90
Dec	12.55	13.55	14.55	16.25	18.00	19.90
Average	11.99	13.05	13.88	15.58	17.36	19.00

Special Quality Bars

At Pittsburgh, Cents Per Pound

	1975	1976	1977	1978	1979	1980
Jan	10.75	10.75	15.10	16.15	19.10	21.00
Feb	10.75	10.75	15.10	16.15	19.10	21.00
Mar	10.75	10.75	15.10	16.15	19.10	21.00
Apr	10.75	10.75	15.10	16.15	19.10	21.00
May	10.75	12.25	15.10	17.525	19.10	21.00
June	10.75	12.25	15.10	17.525	19.10	21.00
July	10.75	14.10†	16.15	17.525	19.10	21.00
Aug	10.75	14.10	16.15	18.15	19.85	21.00
Sept	10.75	14.10	16.15	18.15	19.85	21.00
Oct	10.75	14.10	16.15	18.15	19.85	21.00
	10.75	15.10	16.15	18.15	19.85	22.80
	10.75	15.10	16.15	18.15	19.85	22.80
	10.75	12.84	15.62	17.33	19.41	21.30

†Merchant bar price prior to July '76

Steel Plates

At Pittsburgh, Cents Per Pound

	1975	1976	1977	1978	1979	1980
Jan	12.10	12.10	14.10	15.10	17.85	19.45
Feb	12.10	12.10	14.10	15.10	17.85	19.45
Mar	12.10	12.10	14.10	15.10	17.85	19.45
Apr	12.10	12.10	14.10	15.10	17.85	20.70
May	12.10	12.10	14.10	16.425	18.17	20.70
June	12.10	12.10	14.10	16.425	18.50	20.70
July	12.10	14.10	15.10	16.425	18.50	20.70
Aug	12.10	14.10	15.10	17.05	18.50	20.70
Sept	12.10	14.10	15.10	17.05	18.50	20.70
Oct	12.85	14.10	15.10	17.05	19.45	21.50
Nov	12.85	14.10	15.10	17.05	19.45	21.50
Dec	12.85	14.10	15.10	17.05	19.45	21.50
Average	12.29	13.15	14.60	16.24	18.49	20.62

ANNUAL STATISTICAL REVIEW

Production, Pig Iron

Net Tons

Year	Basic	Bessemer	Low phosphorous	Foundry	Malleable	All Other, including Direct Castings Silvery Pig Iron	Total Pig Iron
1964	85,600,483	2,727,505	195,705	1,623,004	2,273,576	313,254	85,600,483
1965	80,430,801	2,716,000	219,452	1,599,420	2,606,058	413,170	88,184,901
1966	83,473,000	2,882,000	209,000	1,673,000	2,848,000	415,000	91,500,000
1967	81,344,000	1,722,000	166,000	1,550,000	1,830,000	372,000	86,984,000
1968	83,396,000	1,437,000	169,000	1,536,000	1,804,000	438,000	88,780,000
1969	89,888,000	1,306,000	96,000	1,850,000	1,456,000	421,000	95,017,000
1970	86,438,000	1,447,000	146,000	1,707,000	1,415,000	282,000	91,435,000
1971	77,341,000	1,215,000	145,000	1,214,000	1,336,000	48,000	81,299,000
1972	83,961,000	1,336,000	105,000	1,533,000	2,186,000	370,000	88,942,000
1973	96,202,000	1,242,000	101,000	1,581,000	1,352,000	359,000	100,837,000
1974	91,193,000	1,100,000	106,000	1,528,000	1,382,000	600,000	95,909,000
1975	75,911,000	1,087,000	140,000	1,321,000	814,000	650,000	79,923,000
1976	82,894,000	1,150,000	112,000	1,489,000	800,000	425,000	86,[illegible]04,000
1977	78,198,000	254,000	122,000	1,610,000	690,000	454,000	81,328,000
1978	84,497,000	295,000	110,000	1,856,000	471,000	450,000	87,679,000
1979	84,047,000	12,000	178,000	1,457,000	1,003,000	306,000	87,003,000
1980†	....	....	....	....	....	....	65,000,000

†Iron Age estimate.

Source American Iron and Steel Institute

Ferroalloys

Net Tons

Ferromang. and Silicomanganese	Ferrosilicon*	All Other Ferroalloys	Total Ferroalloys
866,557	600,326	865,078	2,331,961
1,009,166	704,158	1,019,815	2,733,139
913,000	519,000	1,071,000	2,503,000
943,000	528,000	1,017,000	2,488,000
901,000	545,000	1,136,000	2,582,000
868,000	580,000	1,127,000	2,575,000
796,000	550,000	1,070,000	2,416,000
925,000	859,000	546,000	2,330,000
954,000	1,004,000	569,000	2,527,000
866,000	1,013,000	641,000	2,520,000
740,000	932,000	612,000	2,284,000
719,000	791,000	417,000	1,927,000
667,000	678,000	459,000	1,910,000
471,000	860,000	452,000	1,754,000
414,000	820,000	432,000	1,666,000
543,000	976,000	489,000	2,008,000
....	....	....	1,800,000

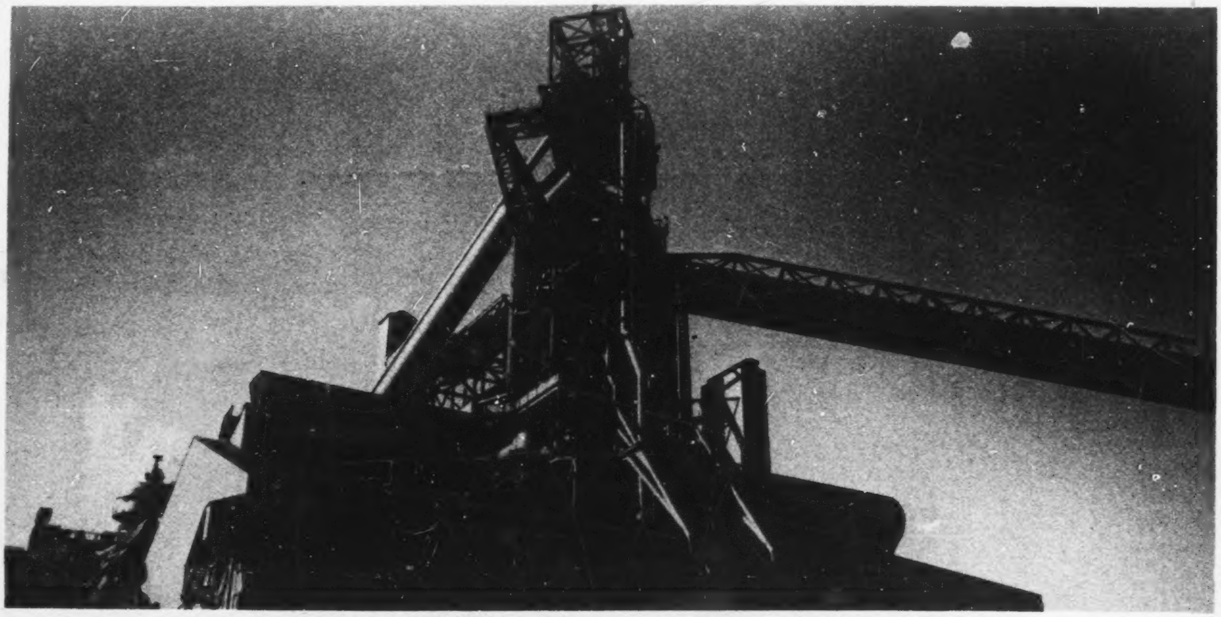
*includes silicon metal.

Composite Pig Iron Price

Average of IRON AGE quotations on basic pig iron and foundry iron per net ton.

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Jan	$63.15	$65.10	$73.60	$78.60	$80.60	$78.16	$180.50	$187.67	$187.67	$191.75	$203.00	$203.00
Feb	63.15	65.10	73.60	78.60	80.60†	78.67	187.67	187.67	187.67	191.75	203.00	203.00
Mar	63.15	68.10	73.60	78.60	78.16	80.70	187.67	187.67	187.67	191.75	203.00	203.00
Apr	63.15	68.10	73.60	78.60	78.16	81.12	187.67	187.67	187.67	191.75	203.00	203.00
May	63.15	68.10	73.60	78.60	78.16	94.47	187.67	187.67	187.67	191.75	203.00	203.00
June	63.15	68.10	73.60	78.60	78.16	134.50	187.67	187.67	187.67	203.00	203.00	203.00
July	63.15	68.10	78.60	78.60	78.16	134.50	187.67	187.67	187.67	203.00	203.00	203.00
Aug	65.10	68.10	78.60	81.23	78.16	155.00	187.67	187.67	191.75	203.00	203.00	203.00
Sept	65.10	73.60	78.60	81.23	78.16	155.00	187.67	187.67	191.75	203.00	203.00	203.00
Oct	65.10	73.60	78.60	81.23	78.16	155.00	187.67	187.67	191.75	203.00	203.00	203.00
Nov	65.10	73.60	78.60	81.23	78.16	163.61	187.67	187.67	191.75	203.00	203.00	203.00
Dec	65.10	73.60	78.60	81.23	78.16	172.79	187.67	187.67	191.75	203.00	203.00	203.00
Average	63.96	69.43	76.10	79.69	78.57	123.63	187.07	187.67	189.57	198.31	$203.00	$203.00

†Gross tons to this point, net tons thereafter.



Inland Steel's new Madeline furnace, capacity 7,000 tons a day, is described as largest in Western Hemisphere.

ANNUAL STATISTICAL REVIEW

Steel Scrap

Philadelphia

Prices of No. 1 Scrap, Per Gross Ton

	1975	1976	1977	1978	1979	1980
Jan	$79.75	$68.25	$74.50	$68.70	$101.10	$100.50
Feb	78.50	78.50	74.50	72.75	110.75	108.00
Mar	87.50	90.10	74.00	76.00	110.25	101.50
Apr	93.50	90.50	71.50	74.75	97.70	92.75
May	89.25	83.00	64.50	71.10	90.75	82.50
June	71.60	81.90	62.50	74.30	93.08	76.10
July	64.12	84.50	61.75	78.00	91.50	83.00
Aug	72.25	78.70	61.10	78.00	89.25	88.25
Sept	73.60	68.25	59.00	75.50	88.50	91.90
Oct	61.62	63.75	48.10	76.30	87.30	91.50
Nov	55.50	62.50	50.25	84.00	88.50	91.50
Dec	60.50	67.75	56.00	91.50	92.70	98.00*
Average	73.97	76.47	63.14	76.74	95.10	92.12*

*Estimate

No. 2 Bundles

	1975	1976	1977	1978	1979	1980
Jan	$48.50	$45.00	$48.50	$46.90	$60.10	$72.00
Feb	48.50	54.00	48.50	51.25	66.50	76.25
Mar	50.90	64.50	48.50	53.50	72.25	71.50
Apr	54.87	69.25	48.50	51.75	62.70	64.75
May	55.50	65.25	48.10	47.30	64.50	53.25
June	49.20	68.30	45.50	50.10	66.50	51.10
July	44.38	71.75	45.50	51.50	66.50	56.00
Aug	45.75	63.10	45.30	51.50	61.50	63.00
Sept	45.20	56.00	44.50	49.50	59.25	65.10
Oct	41.50	47.25	34.70	48.70	58.50	64.50
Nov	40.50	46.50	34.75	55.50	60.00	64.50
Dec	39.50	48.50*	38.50	56.50	66.30	67.50*
Average	47.02	58.28*	44.23	51.17	63.71	64.12*

*Estimate

Chicago

Prices of No. 1 Scrap, Per Gross Ton

	1975	1976	1977	1978	1979	1980
Jan	$79.50	$73.75	$69.50	$71.50	$ 98.30	$ 96.50
Feb	79.75	75.75	69.50	71.50	109.75	100.50
Mar	84.50	89.90	71.00	72.25	121.25	96.50
Apr	83.25	93.75	70.25	76.00	99.30	86.00
May	77.00	85.25	64.10	71.50	99.75	70.50
June	63.10	86.90	58.75	75.30	104.00	63.50
July	54.00	89.50	57.50	77.75	96.90	67.50
Aug	68.00	79.30	57.50	74.00	88.25	77.50
Sept	76.50	70.00	55.00	69.50	86.50	88.50
Oct	65.00	61.75	47.30	72.50	87.30	93.75
Nov	60.50	64.10	45.75	83.00	94.50	98.75
Dec	66.00	67.25	62.25	91.25	93.90	105.50*
Average	71.42	78.10	60.70	75.50	98.30	87.08*

*Estimate

No. 2 Bundles

	1975	1976	1977	1978	1979	1980
Jan	$45.25	$48.50	$47.50	$46.50	$ 64.50	$ 54.50
Feb	47.00	50.50	47.75	46.75	67.50	58.50
Mar	46.10	60.50	48.75	48.50	68.75	57.50
Apr	44.50	58.00	48.50	51.50	59.90	53.25
May	44.50	59.50	43.30	51.10	63.00	49.50
June	40.50	59.50	39.75	49.30	61.50	48.30
July	35.75	59.25	37.50	50.00	53.50	51.50
Aug	40.50	50.50	38.90	48.00	49.50	61.50
Sept	45.90	44.50	38.50	46.50	50.25	72.10
Oct	41.25	45.00	34.70	48.50	52.50	81.75
Nov	41.00	44.70	34.75	54.50	56.50	87.50
Dec	43.00	46.00	44.00	59.75	57.30	84.00*
Average	42.93	52.50	41.99	50.07	58.72	63.32*

*Estimate

Pittsburgh

Prices of No. 1 Scrap, Per Gross Ton

	1975	1976	1977	1978	1979	1980
Jan	$74.75	$74.50	$72.50	$71.50	$ 93.30	$102.00
Feb	79.50	80.00	73.00	72.00	111.75	106.50
Mar	83.10	87.10	75.50	74.50	127.75	105.50
Apr	81.50	91.00	74.00	77.50	102.90	98.00
May	79.00	83.00	67.30	73.10	102.75	79.50
June	66.50	84.70	64.50	74.70	105.50	69.50
July	56.50	88.00	64.50	77.50	99.90	77.75
Aug	68.50	80.70	65.50	77.00	93.50	87.50
Sept	70.30	73.00	63.00	73.75	89.25	102.90
Oct	59.50	66.50	51.90	75.70	87.30	102.50
Nov	59.50	64.70	52.50	83.25	94.50	106.25
Dec	63.75	72.50	63.50	87.00	95.70	107.50*
Average	70.20	78.80	65.64	76.45	100.34	95.36*

*Estimate

No. 2 Bundles

	1975	1976	1977	1978	1979	1980
Jan	$45.50	$48.50	$51.90	$50.30	$60.10	$61.00
Feb	45.50	51.50	50.00	49.75	70.50	67.50
Mar	45.50	61.90	53.00	49.50	78.75	68.70
Apr	48.50	67.50	53.75	50,25	67.70	64.50
May	47.50	63.75	46.90	47.10	69.75	58.75
June	42.70	62.50	42.50	47.70	74.50	52.70
July	41.50	62.50	42.50	52.00	68.30	54.50
Aug	44.50	57.10	46.50	49.75	64.75	63.50
Sept	44.50	52.50	42.50	46.50	62.75	66.50
Oct	44.50	42.50	38.90	46.30	59.30	66.50
Nov	44.50	42.90	38.50	51.00	59.25	69.75
Dec	46.00	48.50*	46.50	55.25	59.50	74.50*
Average	45.05	55.13*	46.12	49.61	66.26	64.03*

*Estimate

Iron Age Composites

Average of Iron Age Scrap Prices Pittsburgh, Chicago, Philadelphia, Gross Ton

No. 1 Heavy Melting

	1975	1976	1977	1978	1979	1980
Jan	$78.00	$72.16	$72.17	$70.56	$ 97.56	$ 99.67
Feb	79.25	78.08	72.33	72.08	110.75	105.00
Mar	85.03	89.03	73.50	74.25	119.75	101.17
Apr	86.08	91.75	71.92	76.08	99.96	92.25
May	81.75	83.75	65.30	71.90	97.75	77.50
June	67.06	84.50	61.91	74.76	100.83	69.70
July	58.21	87.33	61.25	77.75	96.10	76.08
Aug	69.[illegible]	79.56	61.37	76.33	90.33	84.42
Sept	73.46	73.41	58.83	72.91	88.08	94.43
Oct	62.04	64.00	49.10	74.83	87.30	95.91
Nov	58.50	63.77	49.50	83.41	92.50	98.50
Dec	63.41	69.17	60.59	89.91	94.10	101.83*
Average	71.86	77.79	63.15	76.23	97.91	91.37*

*Estimate.

No. 2 Bundles

	1975	1976	1977	1978	1979	1980
Jan	$46.42	$47.33	$49.30	$47.90	$61.56	$ 62.50
Feb	47.00	52.00	48.75	49.25	68.17	67.41
Mar	47.49	62.30	50.08	50.50	73.25	65.90
Apr	49.29	64.92	50.25	51.17	63.43	60.83
May	49.16	62.83	46.03	48.50	65.75	53.83
June	44.13	63.43	42.58	49.03	67.50	50.70
July	40.54	64.50	41.83	51.16	62.76	54.00
Aug	43.58	58.90	43.56	49.75	58.58	62.66
Sept	45.20	51.00	41.83	47.50	57.41	67.90
Oct	42.41	44.91	36.10	47.83	56.76	70.91
Nov	42.00	44.70	36.00	53.66	58.58	72.75
Dec	42.83	47.66	43.00	57.16	61.03	75.50*
Average	45.00	55.20	44.11	50.28	62.89	63.74*

*Estimate.

Iron Ore

Shipments of Iron & Iron Base Powder

Total Net Tons

1966	100,918
1967	93,978
1968	112,506
1969	126,900
1970	114,552
1971	127,898
1972	154,355
1973	194,480
1974	178,893
1975	140,375
1976	194,808
1977	199,393
1978	217,000
1979	199,043
1980	170,000*

Source: Metal Powder Industries Federation. *Estimate.

Lake Shipments of Ore

Great Lakes Shipments, Gross Tons

1964	66,514,396
1965	67,496,944
1966	71,764,863
1967	66,221,139
1968	67,882,251
1969	76,490,010
1970	74,408,199
1971	66,367,537
1972	70,148,090
1973	94,545,275
1974	85,577,977
1975	80,267,092
1976	86,646,674
1977	67,050,341
1978	83,207,000
1979	92,053,933
1980	71,345,256*†

*Estimate †Includes Canada Source: Amer. Iron Ore Assn.

Supply of Iron Ore in the United States

Year	Domestic Shipments	Exports	Imports	Net Supply *
1970	87,389,337	5,491,380	44,891,247	126,789,204
1971	76,887,004	3,060,829	40,124,086	113,950,261
1972	78,201,000	2,095,000	35,760,618	111,866,618
1973	90,838,729	2,746,786	43,296,108	131,388,051
1974	85,112,000	2,323,235	48,029,108	130,817,873
1975	80,267,092	2,537,451	46,742,190	124,471,831
1976	86,646,674	2,997,333	43,933,333	127,582,674
1977	67,050,341	2,143,047	37,904,705	102,811,999
1978	83,207,000	4,213,194	33,616,378	112,610,184
1979	92,053,933	5,147,657	33,776,072	120,682,348
1980**	71,345,256	5,326,998	24,510,479	90,528,737

*Domestic shipments minus exports, plus imports. **Estimate. Source: American Iron Ore Association

ANNUAL STATISTICAL REVIEW

Nonferrous Production

U.S. Production of Primary Aluminum

Short tons

	1973	1974	1975	1976
Jan	372,443	403,763	394,126	322,411
Feb	350,575	376,368	324,381	302,791
Mar	388,637	419,492	347,202	326,210
Apr	370,740	409,687	326,035	324,859
May	380,078	421,605	327,153	349,672
June	372,633	404,935	301,713	345,425
July	381,888	416,343	310,192	364,738
Aug	373,780	411,438	308,410	371,185
Sept	371,555	400,788	300,011	366,447
Oct	388,299	417,475	311,391	390,902
Nov	379,392	405,179	309,667	386,518
Dec	399,097	416,354	318,866	400,219
Total	4,529,117	4,903,427	3,879,147	4,251,377

	1977	1978	1979	1980
Jan	399,030	399,874	418,285	430,924
Feb	351,686	366,437	379,405	406,396
Mar	379,025	395,209	419,218	434,260
Apr	371,310	387,324	401,786	421,105
May	382,489	405,317	423,377	437,938
June	369,145	394,863	410,444	424,510
July	381,888	408,033	428,424	426,572
Aug	376,289	410,130	430,192	426,054
Sept	366,735	399,136	419,248	418,945
Oct	386,029	415,513	434,767	436,676
Nov	380,179	403,454	423,244	415,000
Dec	394,905	418,487	434,702	425,000*
Total	4,538,710	4,803,777	5,023,092	5,103,380

Source: Aluminum Association. *IA Estimate

U.S. Production of Refined Copper

In tons of 2000 pounds.

	1976	1977	1978	1979	1980
Jan	130,300	140,900	129,000	135,600	161,000
Feb	126,600	140,900	112,500	135,800	149,500
Mar	127,700	162,300	143,200	152,200	162,300
Apr	141,100	150,600	141,000	149,800	170,400
May	140,800	166,200	145,300	154,600	158,700
June	141,600	152,400	135,100	149,400	167,200
July	144,000	52,200	96,100	132,300	52,400
Aug	139,000	46,300	138,900	144,900	28,700
Sept	141,100	124,400	144,900	137,500	27,300
Oct	158,100	120,600	163,400	148,700	61,000
Nov	153,300	137,300	162,400	145,000*	75,000*
Dec	154,000	113,000	133,300	33,514	80,000*
Total	1,550,800	1,697,500	1,507,100	1,706,300	1,293,500*
Aver	129,233	141,467	125,592	147,192	107,792*

Source: ABMS. *Estimate

U.S. Production of Slab Zinc

	1976	1977	1978	1979	1980
Jan	45,753	45,619	39,201	45,714	30,511
Feb	45,321	39,633	32,982	46,113	30,613
Mar	47,192	43,584	30,392	52,916	34,777
Apr	46,473	42,921	33,482	51,130	32,123
May	47,540	37,208	35,656	48,870	31,922
June	45,258	31,892	34,506	42,953	28,362
July	45,018	26,817	34,456	44,016	20,640
Aug	39,862	25,410	37,591	41,973	26,556
Sept	40,634	25,969	37,345	39,796	28,438
Oct	46,559	34,188	44,163	46,005	30,816
Nov	41,241	39,959	42,429	43,427	27,500*
Dec	45,102	40,854	42,587	42,000*	31,000*
Total	535,953	434,064	444,790	537,427	353,258*
Aver	44,633	36,171	37,066	44,786	29,438*

Source: ABMS. *Estimate.

U.S. Production of Refined Lead

	1976	1977	1978	1979	1980
Jan	57,677	51,183	59,996	52,990	56,879
Feb	56,316	46,597	50,061	52,237	49,324
Mar	56,245	57,701	55,256	60,632	54,058
Apr	58,509	50,165	55,466	52,493	47,493
May	61,467	51,203	49,057	58,065	47,044
June	54,098	46,948	44,825	55,026	47,142
July	52,856	41,453	42,450	52,606	52,037
Aug	57,088	46,879	50,362	49,878	48,173
Sept	50,200	50,205	51,487	45,400	50,158
Oct	53,500	56,506	60,872	52,936	52,156
Nov	49,094	58,027	55,110	54,598	49,000*
Dec	51,324	55,163	54,249	54,252	53,000*
Total	658,374	612,030	629,191	641,113	606,464*
Aver	54,865	51,003	52,432	53,426	50,539

Source: ABMS. *Estimate.

Nonferrous Prices

Electrolytic Copper

Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	43.03	55.92	51.48	50.35	53.12	68.70
Feb	44.12	56.12	50.37	50.25	56.12	68.70
Mar	44.12	56.12	50.58	52.63	60.12	68.70
Apr	44.12	59.74	52.87	52.63	60.12	68.70
May	45.50	60.12	52.87	52.63	60.12	81.20
June	46.12	60.12	52.87	52.63	60.12	86.10
July	46.12	60.12	52.87	50.63	60.12	86.30
Aug	48.03	60.12	52.87	50.63	60.12	86.70
Sept	51.55	60.12	52.87	50.63	60.12	83.00
Oct	52.12	59.03	52.87	50.63	60.12	78.25
Nov	52.12	56.12	52.19	50.63	60.12	75.80
Dec	52.12	53.12	50.37	50.63	68.00	73.00
Average	47.43	58.07	52.09	51.24	59.86	77.00

	1975	1976	1977	1978	1979	1980
Jan	70.50	63.00	65.20	62.75	75.63	116.95
Feb	63.00	63.00	67.50	62.25	89.36	134.17
Mar	63.00	64.50	70.63	61.62	97.75	105.97
Apr	63.00	68.00	74.00	64.00	90.50	94.57
May	63.00	70.00	72.80	64.33	89.50	92.91
June	62.25	70.00	69.88	65.23	86.39	92.32
July	61.50	74.00	68.75	63.50	85.95	102.88
Aug	63.00	74.00	64.00	66.47	90.24	101.29
Sept	63.00	74.00	60.00	66.83	92.36	98.78
Oct	63.00	72.00	60.00	69.54	97.72	98.91
Nov	63.00	70.00	60.00	71.20	98.49	97.62
Dec	63.00	65.00	61.29	71.50	106.10	98.00
Average	63.44	68.95	66.17	65.77	92.12	102.86*

*Estimate

Aluminum 99.5 Pct Ingot

Cents Per Pound, Freight Allowed

	1969	1970	1971	1972	1973	1974
Jan	26.45	28.00	29.00	29.00	25.00	29.00
Feb	27.00	28.00	29.00	29.00	25.00	29.00
Mar	27.00	28.00	29.00	29.00	25.00	29.24
Apr	27.00	28.59	29.00	29.00	25.00	31.50
May	27.00	29.00	29.00	27.00	25.00	31.50
June	27.00	29.00	29.00	25.00	25.00	33.40
July	27.00	29.00	29.00	25.00	25.00	33.50
Aug	27.00	29.00	29.00	25.00	25.00	35.94
Sept	27.00	29.00	29.00	25.00	25.00	38.70
Oct	27.65	29.00	29.00	25.00	25.00	39.00
Nov	28.00	29.00	29.00	25.00	25.00	39.00
Dec	28.00	29.00	29.00	25.00	27.00	39.00
Average	27.18	28.72	29.00	26.50	25.17	34.00

	1975	1976	1977	1978	1979	1980
Jan	39.00	41.00	48.00	53.00	55.25	66.25
Feb	39.00	41.00	48.00	53.00	58.00	66.25
Mar	39.00	41.00	48.00	53.00	58.00	66.25
Apr	39.00	41.75	51.00	53.00	59.50	72.00
May	39.00	44.00	51.00	55.25	59.50	72.00
June	39.00	44.00	51.00	55.25	59.50	72.00
July	39.00	44.00	53.00	55.25	62.75	72.00
Aug	41.00	47.00	53.00	55.25	62.75	72.00
Sept	41.00	48.00	53.00	55.25	62.75	72.00
Oct	41.00	48.00	53.00	55.25	66.25	76.00
Nov	41.00	48.00	53.00	55.25	66.25	76.00
Dec	41.00	48.00	53.00	55.25	66.25	76.00*
Average	39.83	44.65	51.25	54.50	61.40	71.56*

*Estimate

Straits Tin, Spot Price

	1975	1976	1977	1978	1979	1980
Jan	363.76	294.26	425.14	544.94	624.18	758.95
Feb	372.04	308.28	469.01	549.69	660.84	785.67
Mar	366.04	327.95	480.47	514.96	684.35	812.18
Apr	354.11	329.06	445.42	497.24	678.60	785.72
May	352.54	344.13	451.87	526.96	683.46	784.62
June	342.48	353.75	446.53	555.12	697.82	756.62†
July	333.32	384.96	480.35	559.52	699.59	752.61
Aug	331.86	368.77	519.77	592.37	678.57	751.51
Sept	322.78	360.83	517.76	627.15	697.18	778.59
Oct	321.95	366.02	573.83	681.05	714.24	744.38
Nov	324.03	371.83	579.95	691.11	724.99*	697.21
Dec	302.83	381.27	567.81	636.69	752.17*	700.00
Average	339.81	349.27	496.49	581.40	691.33*	N.A.

†Basis changed from CIF New York to ex-smelter Penang, beginning June 1980

N.A.—Not Applicable

*Estimate

Prime Western Zinc Price

Cents Per Pound

	1969	1970	1971	1972	1973	1974
Jan	13.84	15.50	15.00	17.00	19.50	31.18
Feb	14.00	15.50	15.00	17.00	19.50	31.75
Mar	14.00	15.50	15.06	17.50	19.63	32.70
Apr	14.02	15.50	15.50	17.50	20.38	34.75
May	14.50	15.50	15.77	18.00	20.38	34.75
June	14.50	15.50	16.00	18.50	20.38	35.25
July	14.50	15.50	16.19	18.50	20.38	36.97
Aug	14.50	15.33	17.00	18.50	20.38	38.00
Sept	15.38	15.00	17.00	18.50	20.38	38.95
Oct	15.50	15.00	17.00	18.50	20.38	39.00
Nov	15.50	15.00	17.00	19.50	20.38	39.00
Dec	15.50	15.00	17.00	20.00	30.00	39.00
Average	14.65	15.32	16.13	18.25	20.97	35.94

	1975	1976	1977	1978	1979	1980
Jan	39.00	37.68	37.00	30.50	35.00	37.50
Feb	39.00	37.00	37.00	30.07	36.89	38.67
Mar	38.75	37.00	37.00	29.00	38.05	38.92
Apr	38.75	37.00	37.00	29.00	38.50	38.50
May	38.75	37.00	36.40	29.00	38.50	37.50
June	38.75	37.00	34.00	29.90	38.57	36.50
July	38.75	37.00	34.00	30.00	39.64	35.50
Aug	38.75	37.00	34.00	31.88	36.81	35.97
Sept	38.75	37.00	34.00	32.75	36.07	37.97
Oct	38.75	37.00	32.80	33.75	37.50	38.44
Nov	38.75	37.00	31.17	34.75	37.08	39.63*
Dec	38.75	37.00	30.50	34.75	37.50	40.00*
Average	38.79	37.06	34.57	31.28	37.51	37.88*

*Estimate.

Lead, Common Grade Price

Cents Per Pound

	1974	1975	1976	1977	1978	1979	1980
Jan	18.95	24.50	19.00	26.50	33.00	40.58	51.29
Feb	19.00	24.50	19.00	28.67	33.00	43.75	50.00
Mar	19.30	24.50	20.00	30.50	33.00	46.00	49.55
Apr	21.16	24.50	21.88	31.00	33.00	48.00	45.45
May	21.50	23.60	22.88	31.00	31.23	49.76	40.50
June	23.00	19.00	23.00	31.00	31.00	57.62	34.65
July	24.50	19.00	24.17	31.00	31.00	58.60	35.77
Aug	24.50	19.50	24.75	31.00	32.40	57.97	40.97
Sept	24.50	20.00	24.75	31.00	34.30	58.60	42.40
Oct	24.50	20.00	25.50	31.00	37.00	60.74	45.00
Nov	24.50	20.00	25.50	32.00	38.00	58.27	44.00
Dec	24.50	19.50	25.50	33.00	38.00	57.02	44.50*
Average	23.19	21.55	22.99	30.64	33.74	53.08	43.67*

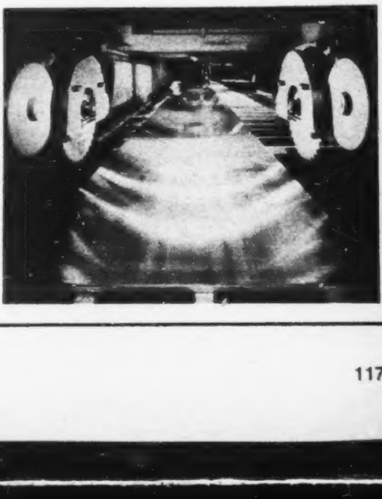
*Estimate

Electrolytic Nickel

Cents Per Pound, New York, Duty Paid

Aug. 25, 1975 to Sept. 30, 1976	220.00
Oct. 1, 1976 to July 25, 1977	241.00
Published price suspended through Feb. 1, 1979	
Feb. 2, 1979 to Mar. 13, 1979	210.00
Mar. 14, 1979 to April 10, 1979	230.00
April 11, 1979 to May 13, 1979	255.00
May 14, 1979 to June 6, 1979	290.00
June 7, 1979 to Dec. 4, 1979	305.00
Dec. 5, 1979 to Feb. 27, 1980	325.00
Feb. 28, 1980	350.00

Source: Inco, Inc.



EFFECTIVE DEC. 8, 1980

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	257	261	248	283
Buffalo	42	46	42	69
Pittsburgh	439	434	390	375
Youngstown	111	103	110	118
Cleveland	147	153	117	135
Detroit	162	168	174	181
Chicago	614	654	620	534
Cincinnati	102	89	96	97
St. Louis	102	98	91	95
Southern	242	234	198	230
Western	140	133	128	160
U.S. Production	2,358	2,373	2,214	2,277

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66c—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective December 8, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,358	2,373	102,284	102,903
Capability Utilization Rate	79.8	80.4	78.9	88.2

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 12/1/80)	22.286	22.286	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$103.17	$101.83	$ 97.83	$ 92.50
No. 2 bundles	$ 75.83	$ 74.50	$ 71.50	$ 58.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$105.50	$105.50	$104.50	$ 94.50
No. 1 steel, Philadelphia	96.50	96.50	91.50	88.50
No. 1 steel, Chicago	103.50	103.50	97.50	94.50
No. 1 bundles, Detroit	101.50	101.50	93.50	88.50
Low Phos., Youngstown	115.50	110.50	105.50	101.50
No. 1 mach'y cast., Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	127.50	127.50	124.50	148.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective December 8, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.95-92.00	88.20-95.00	12/ 8/80
Lead	39.00-43.00	43.00	12/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$617.00
Indium, 99.9%, per troy oz	$12.25-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$375-$405
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$225
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$17.58
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Dec. 1—654.48
Dec. 2—651.85
Dec. 3—649.14
Dec. 4—649.14
Dec. 5—646.15

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	83½	74¼
Yellow brass	66¾	61⅝
Red brass	74⅝	64¼
Comm. bronze	77¼	70¼
Mang. bronze	65	63¼
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	83
No. 2 copper wire	69
Light copper	60

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	79
No. 2 copper wire	65
Light copper	56
No. 1 composition	74
No. 1 comp. turnings	73
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	34
Radiators	55

Aluminum

New mixed clips	40	—41
Old sheet	38	—39
Old cast	38	—39
Clean dry borings	39	—40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	25	—26
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	74	—75
No. 2 copper wire	63	—64
Light copper	59	—60
Radiators	48	—49
No. 1 composition	63	—64
No. 1 composition turn'gs	60	—61
Cocks and faucets	45	—46
Clean heavy yellow brass	39	—40
Brass pipe	45	—46
New soft brass clippings	54	—55
Yellow brass rod ends	46	—47

Lead

Heavy soft lead	20	—21
Whole batteries	9	—10
Type metal	21	—22
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

MATERIALS NEWSFRONT

(Effective December 8, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	121.00 to 122.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	120.00 to 121.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	95.00 to 96.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	116.00 to 117.00
RR specialties	121.00 to 122.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	96.00 to 97.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	122.00 to 123.00
No. 2 dealer bundles	87.00 to 88.00
No. 1 busheling	109.00 to 110.00
Shredder scrap	114.00 to 115.00
Machine shop turn.	50.00 to 51.00
Mixed bor. and turn.	51.00 to 52.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	73.00 to 74.00
Low phos. forge crop	124.00 to 125.00
Low. phos. punchings plate ¼ in. and heavier	130.00 to 131.00
Low phos. 2 ft. and under	126.00 to 127.00
No 1 RR hvy. melting	106.00 to 107.00
Scrap rails, random lgth.	114.00 to 115.00
Reroller rails	131.00 to 132.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	126.00 to 127.00
RR car axles	156.00 to 157.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	118.00 to 119.00
Stove plate	109.00 to 110.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	85.00 to 88.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	64.00 to 67.00
No. 1 busheling	111.00 to 114.00
Shredder scrap	107.00 to 110.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	57.00 to 60.00
Clean cast chemical borings	67.00 to 70.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	99.00 to 100.00
Drop forge flashings	84.00 to 85.00
Machine shop turn.	33.00 to 34.00
Mixed borings and turn.	31.00 to 32.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	114.00 to 115.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$109.00 to $110.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	114.00 to 115.00
No. 2 dealer bundles	75.00 to 76.00
Machine shop turnings	23.00 to 24.00
Shoveling turnings	37.00 to 38.00
Low phos. plate	115.00 to 116.00
Electric furnace bundles	115.00 to 116.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	113.00 to 114.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	110.00 to 111.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	23.00 to 24.00
Cut structural & plates, 2 ft. and under	131.00 to 132.00
Low phos. punchings plate	131.00 to 132.00
Drop forge flashings	65.00 to 66.00
Foundry steel, 2 ft. & under	99.00 to 100.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	139.00 to 140.00
Rails, 18 in. and under	140.00 to 141.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No 1 dealer bundles	74.00 to 75.00
No 2 dealer bundles	44.00 to 45.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	98.00 to 99.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No 1 heavy melting	$101.00 to $102.00
No 2 heavy melting	94.00 to 95.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	100.00 to 101.00
Shredder scrap	109.00 to 110.00
Machine shop turn.	37.00 to 38.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	102.00 to 103.00
Elec. furnace, 3 ft. & under	92.00 to 93.00
Structural and plate, 2 ft.	119.00 to 120.00
Structural and plate, 4 ft.	107.00 to 108.00
No 1 RR hvy. melting	100.00 to 101.00
Scrap rails, random lgth.	106.00 to 107.00
Rails, 18 in. and under	124.00 to 125.00
Angles and splice bars	105.00 to 106.00
No 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	84.00 to 85.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 79.00 to $ 80.00
No. 2 hvy. melting	73.00 to 74.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	120.00 to 121.00
Rails, random length	109.00 to 110.00
Rails, 2 ft. and under	125.00 to 126.00
No. 1 cupola cast	81.00 to 82.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to $ 60.00
No. 2 hvy. melting	52.00 to 54.00
No 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to $ 77.00
No. 2 hvy. melting	67.00 to 69.00
No. 1 dealer bundles	83.00 to 85.00
No. 2 bundles	45.00 to 47.00
No. 1 busheling	83.00 to 85.00
Shredder scrap	87.00 to 89.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	75.00 to 77.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 93.00 to $ 95.00
No. 2 hvy. melting	83.00 to 85.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 dealer bundles	63.00 to 65.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	108.00 to 110.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to 124.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	72.00
No. 1 dealer bundles	88.00
No. 2 bundles	62.00
Mixed steel scrap	62.00
Bush. new fact. prep'd.	88.00
Bush. new fact. unprep'd.	75.00
Machine shop turn.	40.00
Short steel turn.	53.00
Mixed bor. and turn.	40.00
Cast scrap	53.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $109.00
No. 2 hvy. melting	101.00 to 102.00
No. 2 bundles	58.00 to 59.00
Machine shop turn.	19.00 to 20.00
Crushed turnings	56.00 to 58.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	130.00 to 133.00
Unstripped motor blocks	90.00 to 91.00
Cupola cast	106.00 to 110.00

EFFECTIVE DEC. 15, 1980

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	257	257	260	289
Buffalo	45	42	44	56
Pittsburgh	426	439	404	388
Youngstown	116	111	116	130
Cleveland	153	147	125	126
Detroit	165	162	169	172
Chicago	614	614	636	528
Cincinnati	99	102	92	98
St. Louis	101	102	90	97
Southern	255	242	203	227
Western	145	140	135	159
U.S. Production	2,376	2,358	2,274	2,275

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66c—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective December 15, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,376	2,358	105,279	130,110
Capability Utilization Rate	80.5	79.8	72.0	88.0

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 12/1/80)	22.286	22.286	22.019	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$103.17	$103.17	$ 98.17	$ 92.83
No. 2 bundles	$ 75.83	$ 75.83	$ 72.17	$ 59.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$105.50	$105.50	$ 94.50
No. 1 steel, Philadelphia	96.50	96.50	91.50	91.50
No. 1 steel, Chicago	107.50	103.50	97.50	92.50
No. 1 bundles, Detroit	102.50	102.50	96.50	89.50
Low Phos., Youngstown	115.50	115.50	105.50	101.50
No. 1 mach'y cast, Pgh	106.50	106.50	106.50	99.50
No. 1 mach'y cast, Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast, Chi	129.50	127.50	124.50	148.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective December 15, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	82.60-85.00	80.30-85.00	12/15/80
Lead	39.00-43.00	43.00	12/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) - cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$562.75
Indium, 99.9%, per troy oz	$12.25-$20.00
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$375-$405
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$14.97
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Dec. 8—641.38
Dec. 9—644.69
Dec. 10—651.51
Dec. 11—651.51
Dec. 12—656.54

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78⅛	68⅞
Yellow brass	61⅜	56¼
Red brass	69¼	62⅞
Comm. bronze	71⅞	64⅞
Mang. bronze	59⅝	57⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	61
Light copper	52

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	69
No. 2 copper wire	57
Light copper	48
No. 1 composition	73
No. 1 comp. turnings	72
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	32
Radiators	54

Aluminum

New mixed clips	40 —41
Old sheet	38 —39
Old cast	38 —39
Clean dry borings	39 —40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum	
Segregated clippings	44 —45
Mixed L.C. clips	34 —35
Old sheets and cast	27 —28
Boring and turnings	25 —26
Duraluminum clippings	38 —39

Copper and Brass	
No. 1 copper wire	70 —71
No. 2 copper wire	59 —60
Light copper	56 —57
Radiators	44 —45
No. 1 composition	61 —62
No. 1 composition turn'gs	58 —59
Cocks and faucets	43 —44
Clean heavy yellow brass	38 —39
Brass pipe	43 —44
New soft brass clippings	52 —53
Yellow brass rod ends	44 —45

Lead	
Heavy soft lead	20 —21
Whole batteries	9 —10
Type metal	21 —22
Electrotype	29 —30

Nickel	
Nickel solids	175 —190
Nickel rod ends	175 —190
Nickel sheets, clips	175 —190
Nickel turnings	130 —135

Zinc	
New zinc clippings	19 —20
Old diecast zinc	12 —13

EFFECTIVE DEC. 15, 1980

MATERIALS NEWSFRONT

(Effective December 15, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	95.00 to 96.00
No. 1 dealer bundles	121.00 to 122.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	120.00 to 121.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	95.00 to 96.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	116.00 to 117.00
RR specialties	121.00 to 122.00
No. 1 machinery cast	106.00 to 107.00
Cupola cast	99.00 to 100.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	96.00 to 97.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	122.00 to 123.00
No. 2 dealer bundles	87.00 to 88.00
No. 1 busheling	109.00 to 110.00
Shredder scrap	114.00 to 115.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	73.00 to 74.00
Low phos. forge crop	124.00 to 125.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	127.00 to 128.00
No.1 RR hvy. melting	107.00 to 108.00
Scrap rails, random lgth.	116.00 to 117.00
Reroller rails	131.00 to 132.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	126.00 to 127.00
RR car axles	156.00 to 157.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	111.00 to 112.00
Steel car wheels	123.00 to 124.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	85.00 to 88.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	64.00 to 67.00
No. 1 busheling	111.00 to 114.00
Shredder scrap	107.00 to 110.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	60.00 to 63.00
Clean cast chemical borings	67.00 to 70.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	101.00 to 102.00
Drop forge flashings	84.00 to 85.00
Machine shop turn.	33.00 to 34.00
Mixed borings and turn.	31.00 to 32.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	114.00 to 115.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$109.00 to $110.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	114.00 to 115.00
No. 2 dealer bundles	72.00 to 73.00
Machine shop turnings	23.00 to 24.00
Shoveling turnings	37.00 to 38.00
Low phos. plate	115.00 to 116.00
Electric furnace bundles	115.00 to 116.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	113.00 to 114.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	110.00 to 111.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	23.00 to 24.00
Cut structural & plates, 2 ft. and under	131.00 to 132.00
Low phos. punchings plate	131.00 to 132.00
Drop forge flashings	65.00 to 66.00
Foundry steel, 2 ft. & under	99.00 to 100.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	139.00 to 140.00
Rails, 18 in. and under	140.00 to 141.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	98.00 to 99.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$101.00 to $102.00
No. 2 heavy melting	93.00 to 94.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	75.00 to 76.00
No. 1 busheling	100.00 to 101.00
Shredder scrap	110.00 to 111.00
Machine shop turn.	37.00 to 38.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	102.00 to 103.00
Elec. furnace, 3 ft. & under	92.00 to 93.00
Structural and plate, 2 ft.	121.00 to 122.00
Structural and plate, 4 ft.	109.00 to 110.00
No. 1 RR hvy. melting	100.00 to 101.00
Scrap rails, random lgth.	106.00 to 107.00
Rails, 18 in. and under	122.00 to 123.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	105.00 to 106.00
Unstripped motor blocks	82.00 to 83.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to $ 75.00
No. 2 hvy. melting	68.00 to 69.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	118.00 to 119.00
Rails, random length	104.00 to 105.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	79.00 to 80.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to $ 60.00
No. 2 hvy. melting	52.00 to 54.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	630.00 to 650.00
18-8 turnings	530.00 to 550.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to $ 77.00
No. 2 hvy. melting	67.00 to 69.00
No. 1 dealer bundles	83.00 to 85.00
No. 2 bundles	45.00 to 47.00
No. 1 busheling	83.00 to 85.00
Shredder scrap	87.00 to 89.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	75.00 to 77.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	85.00 to 87.00
No. 1 dealer bundles	80.00 to 82.00
No. 2 dealer bundles	65.00 to 67.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to 124.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 83.00
No. 2 heavy melting cut 2 ft. and under	65.00
No. 1 dealer bundles	83.00
No. 2 bundles	62.00
Mixed steel scrap	62.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	48.00
Mixed bor. and turn.	35.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $109.00
No. 2 hvy. melting	101.00 to 102.00
No. 2 bundles	58.00 to 59.00
Machine shop turn.	24.00 to 25.00
Crushed turnings	56.00 to 58.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	130.00 to 133.00
Unstripped motor blocks	90.00 to 91.00
Cupola cast	109.00 to 110.00

STEEL PRICES

Codes identify Producers listed in the Key on page 183. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	22.45

Structurals

Carbon, East	
B3(2)	19.90
U1	19.90
Midwest	
A7, N4	19.90
J3, C20	19.90
W8	19.90
I3, T10, U1	19.90
West	
C6	21.10
U1	20.40
B3	21.10
B3	20.60
South	
A8, C16, U1	19.90
T10	19.90
High-Strength, Low Alloy, East	
B3(2)	19.90
U1	19.90
Midwest	
N4	19.90
W8	19.90
J3	19.90
U1	19.90
I3	19.90
West	
U1, A7	20.40
B3	20.60
B3	21.10
South	
U1, C16	19.90
Wide Flange, Carbon, East	
B3	19.90
U1, A7	19.90
Midwest	
U1	19.90
N4	19.90
I3	19.90
West	
U1	20.40
C6	20.15
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
D1	19.50
S1, J3	19.50
W3	19.50
N4, W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	19.50
B3	21.75
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	26.10
R7, S10, B4	24.80
P15	24.80
S7	Cmp*
J3	Cmp*
U1	27.90
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	27.90
J3	Cmp*
T4	Cmp*
West	
U1	27.90
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	17.35
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	27.55
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.95
G4	25.80
U1	23.95
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	39.25
R7	32.75
B4	27.80
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	35.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	18.95
K1	18.95
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	22.40
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	24.30
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	23.40
S1	23.40
Long-Terne, Midwest	
W5	24.40
A7, U1	24.40
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	18.10
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	**per base box**
B3	$23.31
U1	23.31
Midwest	
B3	$23.31
U1	23.31
J3	23.31
M11	24.94
W3	24.94
W5	23.31
West	
K1	$23.81
U1	23.81
South	
U1	$23.31
Double Reduced (55 lb.)	
Midwest	
M11	$18.89
B3, J3	18.25
U1	18.25
W3	19.89
W5	18.25
West	
K1	$18.75
U1	18.75
South	
U1	$18.25
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$20.60
Midwest	
J3	$20.60
M11	21.83
I3, U1, W5	20.60
W3	21.83
West	
K1	$20.60
U1	20.60
Double Reduced (55 lb.)	
East	
B3	$16.17
Midwest	
M11	$16.82
W5, U1	16.17
J3	15.50
W3	16.82
W5	16.17
West	
U1	$16.17
South	
U1	$16.17

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	20.60
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	27.65
C2	23.025
M9, W10, T11, S8	27.15
N1	24.475
R4	22.25
M1	23.025
B4, C10	27.25
Midwest	
B5, W10, L2, Y1, W8, R3	29.50
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	27.15
West	
B5	26.50
B5	29.50
B6	19.25
R3	30.45-33.40
South	
B5	16.80
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	24.85
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	31.15
T11, S8	30.60
C10	30.60
Midwest	
B5, R3, L2, C10	33.20
C2	28.275
J3, M9, W10	30.60
P3	22.75
B1	22.70
W8, N9	24.15
L2	29.40
West	
R3	34.55-36.60
B5	31.95
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45c

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	21.50
L4	21.50
P2	21.50
U1	21.50
J3	21.50
Midwest	
A7, B3, G3, J3, R3, G2, S1	21.50
I3, U1, W8, I4, W5	21.50
J3	21.50
West	
A7	21.75
U1	21.50
B3	21.50
C6	21.50
O2	21.50
K1	21.75
South	
R3	21.50
A7	21.50
U1	21.50
Alloy, East	
J3	29.30
P2, U1	29.30
B3(2), L4	29.30
Midwest	
W8	23.025
B3	29.30
G2, G3	29.30
I4, U1	29.30
West	
B3	29.30
O2	29.30
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	22.20
K2	22.20
South	
U1	25.65
A8	17.60
West	
C6	21.20

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp.
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		25.38	29.92	34.01	36.49	31.05	31.22	36.28	42.96	48.52	56.59	59.67	72.50
Baltimore		27.61	28.25	34.23	37.41	32.97	30.32	22.81	43.25	50.18	54.82	64.50	70.76
Birmingham		25.12	28.78	32.91	34.37	31.28	31.31	24.43	42.61	40.00	54.49	53.70	77.71
Boston		29.84	27.58	31.28	39.06	34.04	31.49	24.05	42.78	51.87	57.13	62.34	68.76
Buffalo		31.78	27.09	36.67	38.19	33.85	32.36	24.18	43.18	49.58	54.84	64.98	72.50
Chicago		23.96	25.15	28.63	29.86	27.72	27.05	19.92	38.56	44.19	51.22	54.16	60.19
Cincinnati		25.99	24.15	29.16	30.46	28.39	27.41	18.52	40.58	45.84	50.20	57.30	63.46
Cleveland		31.58	29.22	36.90	36.26	33.08	32.25	23.85	43.04	47.25	53.48	60.84	66.85
Denver		33.19	29.50	36.80	37.80	32.85	32.79	23.70	45.13	52.23	60.30	67.60	76.19
Detroit		26.44	24.48	29.44	31.63	28.27	27.43	17.91	42.75	45.53	50.24	57.99	64.36
Houston		24.73	28.33	31.08	39.37	30.91	32.02	24.75	45.59	50.86	58.28	66.20	73.14
Kansas City		25.20	26.46	30.96	30.53	29.07	28.35	21.87	41.67	46.87	52.59	59.38	65.75
Los Angeles		29.30	29.82	34.68	41.24	35.55	36.80	34.52	47.74	59.75	66.59	72.20	81.74
Memphis		30.15	28.98	33.76	35.23	32.42	32.29	22.67	43.14	50.50	56.43	63.47	73.24
Milwaukee		23.97	25.44	28.49	28.74	28.86	26.94	18.04	36.54	44.18	47.90	54.37	60.21
New York		25.15	27.57	30.95	42.58	30.29	28.69	23.98	44.90	50.95	56.22	64.93	71.11
Philadelphia		29.32	28.09	33.42	38.65	33.65	31.58	23.92	43.28	51.16	55.58	64.10	69.73
Pittsburgh		32.45	33.19	37.25	37.41	33.45	33.33	26.05	43.57	47.38	54.56	59.46	71.18
Portland		31.80	17.55	36.67	36.85	30.46	34.08	31.86	53.26	59.60	56.88	58.00	....
San Francisco		29.02	33.21	33.73	41.57	34.37	35.60	35.36	46.95	59.68	66.63	72.20	81.09
Seattle		29.38	30.97	34.73	39.68	31.21	32.67	35.46	49.67	59.77	63.62	72.05	79.44
Spokane		21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis		27.93	25.08	28.51	32.42	28.59	27.55	20.48	40.38	44.91	49.89	55.06	63.37
St. Paul		26.59	23.98	24.79	31.74	29.21	28.10	18.55	40.88	43.03	50.45	57.60	63.90

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2 15/16; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

Prices at all points include metropolitan delivery charges.

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

Cover 1, p. 3, 65-66.

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Chilton's
JANUARY 14, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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HOW WORLD C DITIONS WILL SHAPE YOUR BUSINESS THIS YEAR

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VOL. 224, NO. 2

IRON AGE

JANUARY 14, 1981

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Forecasting for Managers

Key indicator management:
Common sense forecasting
for managers

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

EFFECTIVE DEC. 22, 1980

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	257	257	245	279
Buffalo	48	45	45	53
Pittsburgh	408	426	420	406
Youngstown	109	116	113	133
Cleveland	150	153	129	123
Detroit	170	165	180	167
Chicago	594	614	623	553
Cincinnati	98	99	97	97
St. Louis	101	101	99	82
Southern	263	255	232	237
Western	139	145	136	160
U.S. Production	2,337	2,376	2,319	2,290

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective December 22, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,337	2,376	107,671	132,396
Capability Utilization Rate	79.1	80.5	72.2	87.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/1/81)	22.901	22.286	22.286	20.547
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$100.17	$103.17	$ 98.17	$ 92.83
No. 2 bundles	$ 75.83	$ 75.83	$ 72.83	$ 59.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 99.50	$105.50	$105.50	$ 94.50
No. 1 steel, Philadelphia	96.50	96.50	91.50	91.50
No. 1 steel, Chicago	104.50	107.50	97.50	92.50
No. 1 bundles, Detroit	102.50	102.50	96.50	89.50
Low Phos., Youngstown	106.50	115.50	105.50	101.50
No. 1 mach'y cast., Pgh.	104.50	106.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi.	129.50	129.50	124.50	147.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective December 22, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	85.00-86.40	84.60-85.00	12/22/80
Lead	39.00-43.00	43.00	12/ 1/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% ingot. COPPER (C) - cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$117.50
Beryllium-copper, per lb. cont. Be	$90.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.47
Chromium, 99.8% metallic base	$3.90
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$575.00
Indium, 99.9%, per troy oz.	$12.25-$20.00
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$375-$405
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$15.90
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Dec. 15—672.47	Dec. 18—660.86
Dec. 16—658.63	Dec. 19—656.30
Dec. 17—656.64	

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82	72¾
Yellow Brass	65¼	60⅛
Red Brass	73⅛	66¾
Comm. bronze	75¾	68¾
Mang. bronze	63½	61¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	59
Light copper	50
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	31
Radiators	53

Aluminum

New mixed clips	40 —41
Old sheet	38 —39
Old cast	38 —39
Clean dry borings	39 —40

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum	
Segregated clippings	44 —45
Mixed L.C. clips	34 —35
Old sheets and cast	27 —28
Boring and turnings	24 —25
Duraluminum clippings	38 —39
Copper and Brass	
No. 1 copper wire	68 —69
No. 2 copper wire	57 —58
Light copper	54 —55
Radiators	42 —43
No. 1 composition	60 —61
No. 1 composition turn'gs	57 —58
Cocks and faucets	42 —43
Clean heavy yellow brass	37 —38
Brass pipe	42 —43
New soft brass clippings	51 —52
Yellow brass rod ends	43 —44
Lead	
Heavy soft lead	20 —21
Whole batteries	9 —10
Type metal	21 —22
Electrotype	29 —30
Nickel	
Nickel solids	175 —190
Nickel rod ends	175 —190
Nickel sheets, clips	175 —190
Nickel turnings	130 —135
Zinc	
New zinc clippings	20 —21
Old diecast zinc	13 —14

EFFECTIVE DEC. 22, 1980

MATERIALS NEWSFRONT

(Effective December 22, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to	$100.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	107.00 to	108.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	114.00 to	115.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	119.00 to	120.00
Heavy turnings	89.00 to	90.00
No. 1 RR hvy. melting	119.00 to	120.00
Rails, 2 ft. and under	131.00 to	132.00
Scrap rails, random lgth	113.00 to	114.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	110.00 to	111.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 dealer bundles	87.00 to	88.00
No. 1 busheling	109.00 to	110.00
Shredder scrap	114.00 to	115.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	73.00 to	74.00
Low phos. forge crop	124.00 to	125.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to	132.00
Low phos. 2 ft. and under	127.00 to	128.00
No.1 RR hvy. melting	104.00 to	105.00
Scrap rails, random lgth	114.00 to	115.00
Reroller rails	129.00 to	130.00
Rails, 2 ft. and under	137.00 to	138.00
RR couplers and knuckles	126.00 to	127.00
RR car axles	156.00 to	157.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	111.00 to	112.00
Steel car wheels	123.00 to	124.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	88.00
No. 1 dealer bundles	111.00 to	114.00
No. 2 dealer bundles	64.00 to	67.00
No. 1 busheling	111.00 to	114.00
Shredder scrap	106.00 to	109.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	60.00 to	63.00
Clean cast chemical borings	64.00 to	67.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	122.00 to	125.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	98.00 to	101.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	102.00 to	103.00
No. 2 bundles	53.00 to	54.00
No. 1 busheling	101.00 to	102.00
Drop forge flashings	84.00 to	85.00
Machine shop turn.	33.00 to	34.00
Mixed borings and turn.	31.00 to	32.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	114.00 to	115.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	70.00 to	71.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	32.00 to	33.00
Low phos. plate	106.00 to	107.00
Electric furnace bundles	106.00 to	107.00
Galvanized bundles	95.00 to	96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	128.00 to	129.00
Low phos. punchings plate	128.00 to	129.00
Drop forge flashings	65.00 to	66.00
Foundry steel, 2 ft. & under	99.00 to	100.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	139.00 to	140.00
Rails, 18 in. and under	140.00 to	141.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to	$ 70.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 busheling	76.00 to	77.00
No. 1 dealer bundles	74.00 to	75.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	83.00 to	84.00
Foundry steel, 2 ft.	83.00 to	84.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	78.00 to	79.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	98.00 to	99.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$101.00 to	$102.00
No. 2 heavy melting	93.00 to	94.00
No. 1 dealer bundles	102.00 to	103.00
No. 2 bundles	75.00 to	76.00
No. 1 busheling	99.00 to	100.00
Shredder scrap	109.00 to	110.00
Machine shop turn.	37.00 to	38.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Electric furnace bundles	102.00 to	103.00
Elec. furnace, 3 ft. & under	92.00 to	93.00
Structural and plate, 2 ft.	118.00 to	119.00
Structural and plate, 4 ft.	109.00 to	110.00
No. 1 RR hvy. melting	100.00 to	101.00
Scrap rails, random lgth	103.00 to	104.00
Rails, 18 in. and under	119.00 to	120.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	105.00 to	106.00
Unstripped motor blocks	80.00 to	81.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to	$ 75.00
No. 2 hvy. melting	68.00 to	69.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	50.00 to	51.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	118.00 to	119.00
Rails, random length	104.00 to	105.00
Rails, 2 ft. and under	122.00 to	123.00
No. 1 cupola cast	79.00 to	80.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to	$ 60.00
No. 2 hvy. melting	52.00 to	54.00
No. 2 dealer bundles	41.00 to	43.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	630.00 to	650.00
18-8 turnings	530.00 to	550.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to	$ 77.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	83.00 to	85.00
No. 2 bundles	45.00 to	47.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	87.00 to	89.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	26.00 to	28.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	75.00 to	77.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	85.00 to	87.00
No. 1 dealer bundles	80.00 to	82.00
No. 2 dealer bundles	65.00 to	67.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to	$ 90.00
No. 2 hvy. melting	78.00 to	80.00
No. 1 dealer bundles	74.00 to	76.00
No. 2 dealer bundles	58.00 to	60.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to	124.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 98.00 to	$100.00
No. 2 hvy. melting	87.00 to	89.00
No. 2 bundles	74.00 to	76.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 83.00
No. 2 heavy melting cut 2 ft. and under	65.00
No. 1 dealer bundles	83.00
No. 2 bundles	62.00
Mixed steel scrap	62.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	48.00
Mixed bor. and turn.	35.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to	$109.00
No. 2 hvy. melting	101.00 to	102.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	24.00 to	25.00
Crushed turnings	56.00 to	58.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	130.00 to	133.00
Unstripped motor blocks	90.00 to	91.00
Cupola cast	109.00 to	110.00

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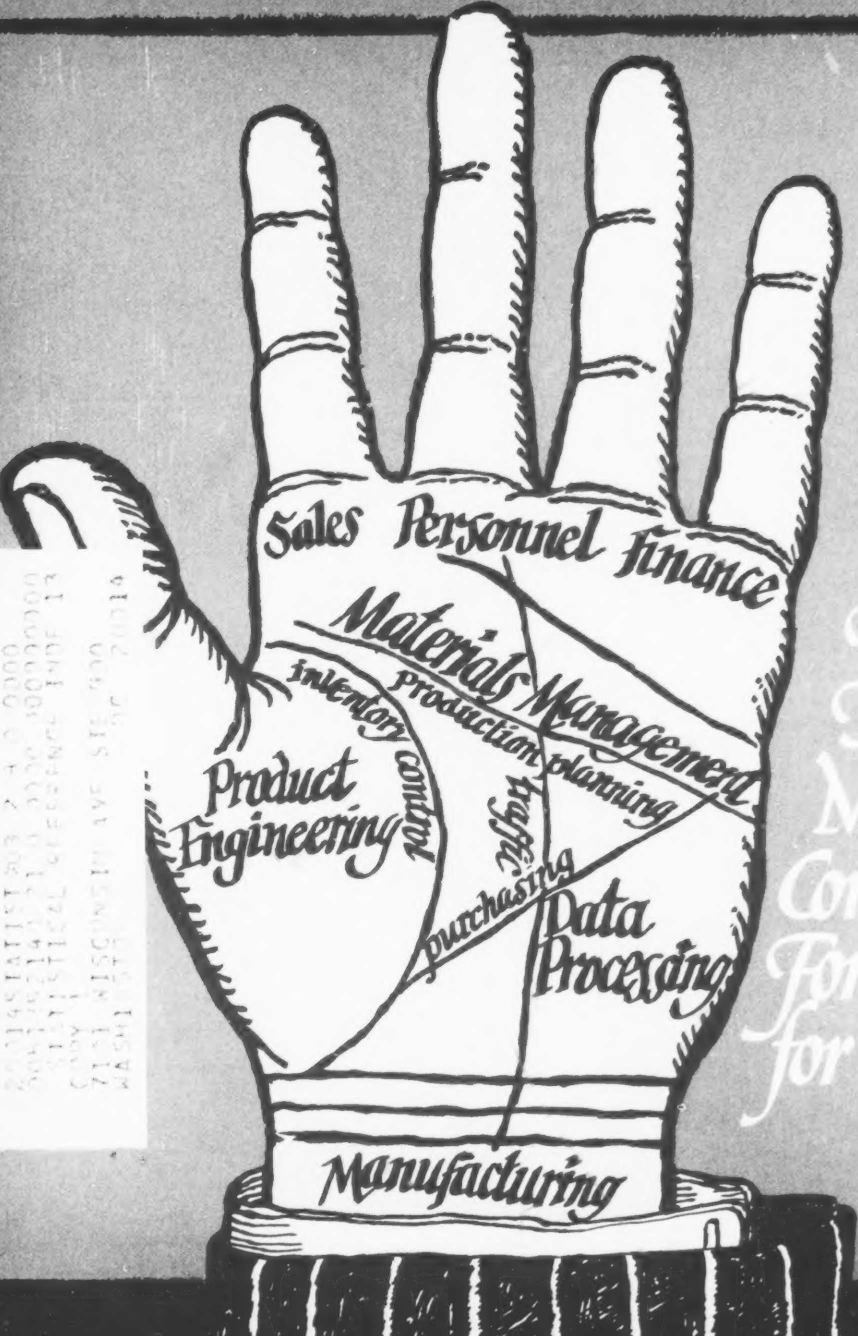
IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

JANUARY 26, 1981

DETROIT TURNS TO ITS SUPPLIERS FOR HELP IN MANUFACTURING R&D

MANUFACTURING SYSTEMS SERIES: 12 – AN UPDATE ON SOFTWARE SELECTION


Sales
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Key Indicator Management: Common Sense Forecasting for Managers

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JANUARY 26, 1981

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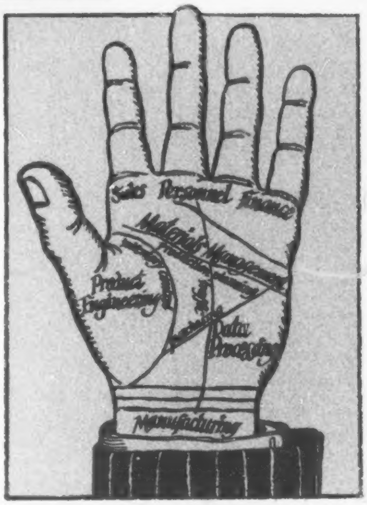

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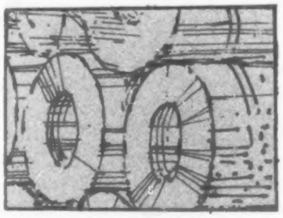

How nonferrous producers are pushing materials performance higher

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING ORDER TRENDS

Is slowed pace of orders sounding a warning bleep?

There were more signs of softness than vigor in the latest reading on the flow of new orders to durable goods plants.

The latest month of complete orders data is November. In that month, orders rose by 1.3 pct. That's fine as far as it goes. But it shows a declining trend from the two previous months.

Dollar volume of orders rose by 9.3 pct in September and by 2.2 pct in October.

Moreover, the lion's share of the modest orders increase that did occur in November was centered in the aircraft and missiles industry. Note Commerce Dept. analysts, "Most of the November increase (in total orders) came from the aircraft and parts industry. Excluding the transportation equipment category, new orders for durable goods declined by 0.3 pct."

But there were 'plus' signs in November. New orders for both electrical and nonelectrical machinery rose as noted on the table here. Too, new orders received by capital goods producers went up by almost 4 pct.

The real soft spot in November was in the primary metals industry. Nonferrous metals orders were down from October by 8.4 pct and steel business was down by 2.3 pct.

The year 1980, through November, was an unusual one for orders. Unbelievably, it was a V-shaped period. From a dollar volume of $81.5 billion reached in January, orders, in a plunge of five straight months, bumped ground at $66.5 billion in July. From that low point, orders climbed to $81.8 billion in November.

So, in a crazy period of 11 months, orders fell by 18 pct and then bounced back up by 23 pct."

Actually, much of the story on the up-and-down 1980 orders pattern lies in the great slide in the overall economy in the second quarter. Real GNP in that period, at an annual rate, fell by a record 9.9 pct as the Federal Reserve Board slapped on credit controls and interest rates went through the roof.

Probably, one of the best descriptions of the 1980 orders trend yet heard came from a metalworking company economist who, looking at orders adjusted for inflation said, "We have really had a plateau where the middle fell out."

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$193.2*	$191.2	$187.0
Manufacturing, Total	4th Qtr.	88.9*	87.3	85.2
Manufacturing, Durable Goods	4th Qtr.	41.6*	40.4	41.3
Mining Industry	4th Qtr.	6.8*	6.4	6.1
Key Indicators, Durable Goods Manufacturing				
New Orders	Nov.	81.8	80.7	75.9
Shipments	Nov.	80.3	79.5	73.8
Inventories	Nov.	160.9	160.1	150.5
Unfilled Orders	Nov.	277.3	275.8	264.9
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Nov.	22.0	20.6	21.8
Capital Goods Producers, Defense Industries	Nov.	4.5	3.9	4.0
Primary Metals, Total	Nov.	13.1	13.7	11.7
Steel (SIC 331)	Nov.	7.0	7.2	5.2
Iron & Steel Castings (SIC 332)	Nov.	1.1	1.0	1.4
Nonferrous Metals	Nov.	5.0	5.5	5.1
Nonelectrical Mach.-Equip. Industries, Total	Nov.	15.0	14.8	13.8
Engines & Turbines	Nov.	1.3	1.3	1.1
Farm Machinery & Equipment (Shipments)	Nov.	1.2	1.2	1.0
Construction, Mining & Materials Hdlg. Equip	Nov.	2.5	2.9	2.2
General Industrial Machinery	Nov.	1.2	1.2	1.1
Fluid Power Equipment** (Index-1972=100)	Nov.	242	261	257
Metalworking Machinery	Nov.	.7	.9	1.0
Machine Tools, Total (Millions $, Unadjusted)	Nov.***	331.7	330.0	432.9
Machine Tools, Metal-Cutting	Nov.***	279.9	286.6	352.4
Machine Tools, Metal-Forming	Nov.***	51.8	43.4	80.5
Electrical Mach. & Equip. Industries, Total	Nov.	11.4	11.1	9.8
Elec. Transmission Equip. & Industrial Apparatus	Nov.	1.7	1.9	1.7
Household Appliances	Nov.	1.3	1.2	1.1
Communication Equipment	Nov.	3.9	3.5	2.9
Transportation Equip. Industry, Total	Nov.	16.2	15.0	16.6
Motor Vehicles & Parts (Shipments)	Nov.	9.8	9.9	10.1
Aircraft, Missiles & Parts	Nov.	4.5	3.3	5.7
Shipbuilding & Military Tanks	Nov.	.8	.7	.7
Fabricated Metal Products, Total	Nov.	10.0	10.1	9.0
Instruments, Total	Nov.	3.6	3.6	3.2

*Est—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

EFFECTIVE DEC. 29, 1980

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	237	257	255	280
Buffalo	40	48	47	51
Pittsburgh	386	408	428	398
Youngstown	87	109	106	133
Cleveland	152	150	149	142
Detroit	159	170	192	175
Chicago	574	594	651	558
Cincinnati	99	98	90	92
St. Louis	66	101	97	71
Southern	270	263	236	252
Western	132	139	140	166
U.S. Production	2,202	2,337	2,391	2,318

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective December 29, 1980)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,202	2,337	109,873	134,583
Capability Utilization Rate	74.6	79.1	72.3	87.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/1/81)	22.901	22.901	22.286	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 97.17	$100.17	$ 99.83	$ 92.83
No. 2 bundles	$ 74.17	$ 75.83	$ 74.50	$ 60.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 99.50	$ 99.50	$105.50	$ 94.50
No. 1 steel, Philadelphia	96.50	96.50	91.50	91.50
No. 1 steel, Chicago	95.50	104.50	102.50	92.50
No. 1 bundles, Detroit	94.50	102.50	101.50	89.50
Low Phos., Youngstown	106.50	106.50	105.50	101.50
No. 1 mach'y cast., Pgh	104.50	104.50	106.50	99.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	127.50	147.50

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* Finished Steel Cosite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective December 29, 1980)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	88.00-89.05	87.90-89.00	12/26/80
Lead	39.00	39.00-43.00	12/22/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$593.75
Indium, 99.9%, per troy oz	$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$355-$365
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$200
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$15.85
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Dec. 22—659.72
Dec. 23—665.98
Dec. 24—N.A.
Dec. 25—Holiday
Dec. 26—N.A.

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	84⅝	75⅜
Yellow brass	72¼	67⅛
Red brass	77⅞	71½
Comm. bronze	79¾	72¾
Mang. bronze	71	69¼
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	79
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	62
Light copper	53
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	31
Radiators	53

Aluminum

New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	67	—68
No. 2 copper wire	56	—57
Light copper	54	—55
Radiators	42	—43
No. 1 composition	60	—61
No. 1 composition turn'gs	57	—58
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	20	—21
Whole batteries	9	—10
Type metal	21	—22
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE DEC. 29, 1980

MATERIALS NEWSFRONT

(Effective December 29, 1980) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to $100.00
No. 2 hvy. melting	89.00 to 90.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	107.00 to 108.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	115.00 to 116.00
Machine shop turn	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	119.00 to 120.00
Heavy turnings	89.00 to 90.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth	113.00 to 114.00
RR specialties	122.00 to 123.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$ 95.00 to $ 96.00
No. 2 hvy. melting	93.00 to 94.00
No. 1 dealer bundles	105.00 to 106.00
No. 1 factory bundles (auto)	112.00 to 113.00
No. 2 dealer bundles	82.00 to 83.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	110.00 to 111.00
Machine shop turn	51.00 to 52.00
Mixed bor. and turn	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	73.00 to 74.00
Low phos. forge crop	121.00 to 122.00
Low phos. punchings plate ¼ in. and heavier	128.00 to 129.00
Low phos. 2 ft. and under	124.00 to 125.00
No. 1 RR hvy. melting	104.00 to 105.00
Scrap rails, random lgth	108.00 to 109.00
Reroller rails	127.00 to 128.00
Rails, 2 ft. and under	135.00 to 136.00
RR couplers and knuckles	122.00 to 123.00
RR car axles	153.00 to 154.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	111.00 to 112.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	85.00 to 88.00
No. 1 dealer bundles	112.00 to 115.00
No. 2 dealer bundles	64.00 to 67.00
No. 1 busheling	112.00 to 115.00
Shredder scrap	104.00 to 107.00
Machine shop turn	38.00 to 41.00
Mixed bor. and turn	38.00 to 41.00
Shoveling turnings	60.00 to 63.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars

No. 1 hvy. melting	$ 80.00 to $ 81.00
No. 2 hvy. melting	79.00 to 80.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	91.00 to 92.00
Drop forge flashings	80.00 to 81.00
Machine shop turn	29.00 to 30.00
Mixed borings and turn	26.00 to 27.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	40.00 to 41.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	70.00 to 71.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	32.00 to 33.00
Low phos. plate	106.00 to 107.00
Electric furnace bundles	106.00 to 107.00
Galvanized bundles	95.00 to 96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn	17.00 to 18.00
Mixed bor. and turn	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	128.00 to 129.00
Low phos. punchings plate	128.00 to 129.00
Drop forge flashings	65.00 to 66.00
Foundry steel, 2 ft. & under	99.00 to 100.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	139.00 to 140.00
Rails, 18 in. and under	140.00 to 141.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 busheling	76.00 to 77.00
No. 1 dealer bundles	74.00 to 75.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn	12.00 to 13.00
Mixed bor. and turn	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to $ 93.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	78.00 to 79.00
Machine shop turn	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	98.00 to 99.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$100.00 to $101.00
No. 2 heavy melting	92.00 to 93.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	75.00 to 76.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	107.00 to 108.00
Machine shop turn	37.00 to 38.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	101.00 to 102.00
Elec. furnace, 3 ft. & under	91.00 to 92.00
Structural and plate, 2 ft.	117.00 to 118.00
Structural and plate, 4 ft.	107.00 to 108.00
No. 1 RR hvy. melting	100.00 to 101.00
Scrap rails, random lgth	101.00 to 102.00
Rails, 18 in. and under	119.00 to 120.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	105.00 to 106.00
Unstripped motor blocks	80.00 to 81.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to $ 75.00
No. 2 hvy. melting	68.00 to 69.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
Machine shop turn	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	118.00 to 119.00
Rails, random length	104.00 to 105.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	79.00 to 80.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 55.00 to $ 57.00
No. 2 hvy. melting	49.00 to 51.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn	7.00 to 8.00
Machine shop turn	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	640.00 to 660.00
18-8 turnings	540.00 to 560.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 75.00 to $ 77.00
No. 2 hvy. melting	67.00 to 69.00
No. 1 dealer bundles	83.00 to 85.00
No. 2 bundles	45.00 to 47.00
No. 1 busheling	83.00 to 85.00
Shredder scrap	87.00 to 89.00
Machine shop turn	12.00 to 14.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	75.00 to 77.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	85.00 to 87.00
No. 1 dealer bundles	80.00 to 82.00
No. 2 dealer bundles	65.00 to 67.00
Machine shop turn	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to $ 90.00
No. 2 hvy. melting	78.00 to 80.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	58.00 to 60.00
Machine shop turn	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to 124.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	77.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd	83.00
Bush. new fact. unprep'd	67.00
Machine shop turn	35.00
Short steel turn	30.00
Mixed bor. and turn	33.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	94.00 to 95.00
No. 2 bundles	58.00 to 59.00
Machine shop turn	23.00 to 24.00
Crushed turnings	53.00 to 54.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	125.00 to 128.00
Unstripped motor blocks	90.00 to 91.00
Cupola cast	109.00 to 110.00

EFFECTIVE JAN. 5. 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	250	237	261	280
Buffalo	45	40	46	51
Pittsburgh	399	386	434	398
Youngstown	110	87	103	133
Cleveland	156	152	153	142
Detroit	148	159	168	175
Chicago	612	574	654	558
Cincinnati	114	99	89	92
St. Louis	80	66	98	71
Southern	255	270	234	258
Western	140	132	133	166
U.S. Production	2,309	2,202	2,373	2,318

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective January 5, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,309	2,202	109,873	134,583
Capability Utilization Rate	78.2	74.6	72.3	87.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/1/81)	22.901	22.901	22.286	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.83	$ 97.17	$101.83	$ 95.17
No. 2 bundles	$ 72.83	$ 74.17	$ 74.50	$ 62.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$ 99.50	$105.50	$ 97.50
No. 1 steel, Philadelphia	96.50	96.50	96.50	92.50
No. 1 steel, Chicago	95.50	95.50	103.50	95.50
No. 1 bundles, Detroit	94.50	94.50	101.50	89.50
Low Phos., Youngstown	106.50	106.50	110.50	101.50
No. 1 mach'y cast., Pgh	104.50	104.50	106.50	99.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	127.50	147.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective January 5, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.00-89.00	86.25-89.00	1/ 5/81
Lead	39.00	39.00-43.00	12/22/80
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-4.25
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$597.50
Indium, 99.9%, per troy oz	$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$355-$365
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$200
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$16.35
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Dec. 24—656.63
Dec. 25—Holiday
Dec. 26—657.94
Dec. 29—656.34
Dec. 30—655.27
Dec. 31—658.34
Jan. 1—Holiday
Jan. 2—662.80

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	83⅜	74⅛
Yellow brass	71	65⅞
Red brass	76¾	70¼
Comm. bronze	78⅝	71½
Mang. bronze	69¾	68
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	79
No. 2 copper wire	66
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, dol. refinery)

No. 1 copper wire	74
No. 2 copper wire	62
Light copper	52
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	31
Radiators	53

Aluminum		
New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	67	—68
No. 2 copper wire	56	—57
Light copper	54	—55
Radiators	42	—43
No. 1 composition	60	—61
No. 1 composition turn'gs	57	—58
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	20	—21
Whole batteries	9	—10
Type metal	21	—22
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE JAN. 5, 1981

MATERIALS NEWSFRONT

(Effective January 5, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	107.00 to	108.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	115.00 to	116.00
Heavy turnings	89.00 to	90.00
No. 1 RR hvy. melting	119.00 to	120.00
Rails, 2 ft. and under	131.00 to	132.00
Scrap rails, random lgth.	113.00 to	114.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	105.00 to	106.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 dealer bundles	79.00 to	80.00
No. 1 busheling	99.00 to	100.00
Shredder scrap	109.00 to	110.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	121.00 to	122.00
Low. phos. punchings plate ¼ in. and heavier	128.00 to	129.00
Low phos. 2 ft. and under	124.00 to	125.00
No.1 RR hvy. melting	103.00 to	104.00
Scrap rails, random lgth.	108.00 to	109.00
Reroller rails	127.00 to	128.00
Rails, 2 ft. and under	135.00 to	136.00
RR couplers and knuckles	122.00 to	123.00
RR car axles	153.00 to	154.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	111.00 to	112.00
Steel car wheels	121.00 to	122.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to	$ 98.00
No. 2 hvy. melting	83.00 to	86.00
No. 1 dealer bundles	112.00 to	115.00
No. 2 dealer bundles	63.00 to	66.00
No. 1 busheling	112.00 to	115.00
Shredder scrap	103.00 to	106.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	60.00 to	63.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	122.00 to	125.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	98.00 to	101.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	91.00 to	92.00
Drop forge flashings	80.00 to	81.00
Machine shop turn.	29.00 to	30.00
Mixed borings and turn	26.00 to	27.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	40.00 to	41.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	70.00 to	71.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	106.00 to	107.00
Electric furnace bundles	106.00 to	107.00
Galvanized bundles	95.00 to	96.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	128.00 to	129.00
Low phos. punchings plate	128.00 to	129.00
Drop forge flashings	65.00 to	66.00
Foundry steel, 2 ft. & under	99.00 to	100.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	139.00 to	140.00
Rails, 18 in. and under	140.00 to	141.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	95.00 to	96.00
Structural and plate, 2 ft. and under	103.00 to	104.00
Rails, 2 ft. and under	81.00 to	82.00
Scrap rails, random lgth.	61.00 to	62.00
No. 1 machinery cast	111.00 to	112.00
No. 1 cupola cast	79.00 to	80.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	80.00
Foundry steel, 2 ft	79.00 to	80.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	74.00 to	75.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 98.00 to	$ 99.00
No. 2 heavy melting	91.00 to	92.00
No. 1 dealer bundles	100.00 to	101.00
No. 2 bundles	75.00 to	76.00
No. 1 busheling	97.00 to	98.00
Shredder scrap	107.00 to	108.00
Machine shop turn.	37.00 to	38.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Electric furnace bundles	101.00 to	102.00
Elec. furnace, 3 ft. & under	88.00 to	89.00
Structural and plate, 2 ft.	117.00 to	118.00
Structural and plate, 4 ft.	105.00 to	106.00
No. 1 RR hvy. melting	100.00 to	101.00
Scrap rails, random lgth.	101.00 to	102.00
Rails, 18 in. and under	119.00 to	120.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	105.00 to	106.00
Unstripped motor blocks	80.00 to	81.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 71.00
No. 2 hvy. melting	65.00 to	66.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	101.00 to	102.00
Rails, 2 ft. and under	120.00 to	121.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 55.00 to	$ 57.00
No. 2 hvy. melting	49.00 to	51.00
No. 2 dealer bundles	41.00 to	43.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	640.00 to	660.00
18-8 turnings	540.00 to	560.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	65.00 to	67.00
No. 1 dealer bundles	79.00 to	81.00
No. 2 bundles	42.00 to	44.00
No. 1 busheling	79.00 to	81.00
Shredder scrap	83.00 to	85.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	24.00 to	26.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	75.00 to	77.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	85.00 to	87.00
No. 1 dealer bundles	80.00 to	82.00
No. 2 dealer bundles	65.00 to	67.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 88.00 to	$ 90.00
No. 2 hvy. melting	78.00 to	80.00
No. 1 dealer bundles	74.00 to	76.00
No. 2 dealer bundles	58.00 to	60.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	122.00 to	124.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 98.00 to	$100.00
No. 2 hvy. melting	87.00 to	89.00
No. 2 bundles	74.00 to	76.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars.

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	77.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	30.00
Mixed bor. and turn.	33.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	23.00 to	24.00
Crushed turnings	53.00 to	54.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	119.00 to	121.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	105.00 to	106.00

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PUBLICATION HAVE BEEN FILMED

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1981

FEBRUARY 2, 19

IRON AGE

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VOL. 224, NO. 4

IRON AGE

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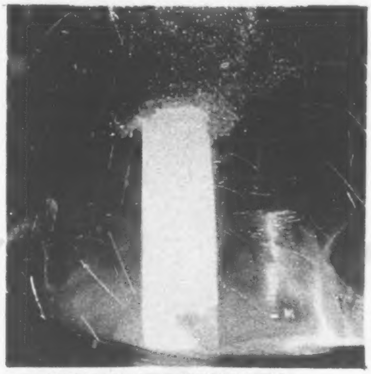

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Are ethics in engineering under attack?

IRON AGE (ISSN 0021-1506) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $80 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING PRICE TRENDS

Price fever cools as business turns cold

About the best that can be said for producer prices in 1980 is that they slowed down in their rate of increase in the last four months.

These prices advanced at an average monthly rate of a bit more than 1 pct in the January-August period. And they rose at less than half that rate in the September-December period.

But that good news is tempered by the fact that this price cooling was due chiefly to a slowed volume of business activity. The U.S. economy moved much more sluggishly in the closing months of last year than it did in earlier months.

For all of 1980, prices of producer finished goods rose by 11.7 pct. This was down from the 12.5 pct rise rate the year before. But again, so was business activity.

As one metalworking company economist notes, "I hate to think so, but it does look like the only thing that seems to slow down the upward march of prices is a downward march in business activity."

If there was a leading reason for the price-cooling slowdown in business in the last four months of 1980, it was probably rising interest rates. It was in August that interest rates started a climb that eventually led to record peaks. At the same time, business activity slowed and so did price advances.

Prices of metalworking goods last year behaved about in line with overall industrial prices. The year-to-year percentage price changes as noted on the table here for 23 metalworking lines averaged 11.4 pct. The leader in price inflation for the year, according to this grouping, was ball and roller bearings with a 17.4 pct rise.

For much of 1980, machine tools led in many of the month-to-month price hikes. But in the latter months of the year, price hike leadership tended to shift about among various metalworking lines.

In December, three metalworking goods lines showed the sharpest rises. The leader was pumps, compressors and allied equipment with a 2.4 pct monthly price hike. Next, was mechanical power transmission equipment with a 2 pct monthly hike. And not far behind was fluid power equipment with a 1.9 pct price rise.

Latest Month Covered: December, 1980

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	330.6	+ .6	+14.9
Metal Forming Machine Tools	363.2	+ 1.7	+14.1
Agricultural Machinery & Equip	269.5	+ 1.3	+10.4
Construction Machinery & Equip	301.1	+ .5	+12.0
Special Industry Mach. & Equip	291.2	+ 1.1	+13.7
Industrial Process Furnace & Ovens	305.8	+ .7	+12.1
Industrial Material Handling Equip	261.7	+ .2	+ 8.8
Pumps, Compressors & Allied Equip	304.7	+ 2.4	+14.6
Fluid Power Equip	211.3	+ 1.9	+14.5
Mechanical Power Transmission Equip	279.4	+ 2.0	+13.4
Automobiles	197.4	- .5	+ 9.2
Motor Trucks	245.6	- .8	+11.2
Railroad Equipment	323.6	NC	+12.0
Fabricated Metal Structural Products	279.2	+ .6	+ 8.3
Electric Motors	255.5	+ .1	+ 8.0
Valves & Fittings	296.5	+ .6	+10.2
Ball & Roller Bearings	279.0	+ .1	+17.4
Plain Bearings	271.5	.3	+ 9.1
Cutting Tools & Accessories	240.6	+ .4	+10.5
Heating Equipment	212.6	+ .7	+ 8.7
Plumbing Fixtures & Brass Fittings	254.4	+ 1.0	+12.3
Metal Containers	303.3	NC	+ 8.0
Miscellaneous Metal Products	258.4	+ 3	+ 8.1

Data based on U.S. Labor Dept.'s Producer Price Index

AN INSIDE LOOK AT SOVIET STEELMAKING

While the U.S.S.R. is the largest steelmaker, it is also concerned about quality. A Soviet metallurgist comments.

For the last seven years (since 1974), the Russians have been the world's largest steel producers (see chart, below).

It's estimated that one out of every four tons in the world is now smelted in the USSR. And that quantity dominance is expected to continue.

Predicasts, Inc., of Cleveland, a highly-regarded research organization, predicts that by 1995 when world steel output will reach about 1.4 billion metric tons, the three largest contributors to that tonnage will be the USSR with 284 million tons, the U.S. with 179 million tons and Japan with 169 million tons.

From all this it might be concluded that the dominant aim of Soviet metallurgists will be the rapid growth of production.

Not so, says a leading Soviet metals expert, Professor Yevgeny Kalinnikov, director of technology in Moscow and a consultant with the Russian government on the metals industry.

In a report transmitted to *Iron Age* by the Novosti Press Agency Dr. Kalinnikov notes, "Together with the increase in steel output, the USSR is giving increasingly more attention to the qualitative growth of metallurgical production."

"Special importance," he adds, "is being attached to the introduction of the most efficient, modern metallurgical units; the phasing out of outdated equipment; and the introduction of new progressive technologies.

"We are also raising the quality and optimizing the range of rolled products with a view to sharply reducing metal consumption in engineering and metalworking," Dr. Kalinnikov notes. "Questions of improving working conditions and protecting the environment are also being resolved. The systems of managing the economy in general and ferrous metallurgy in particular are being perfected, partly through expanding the use of automation and computers."

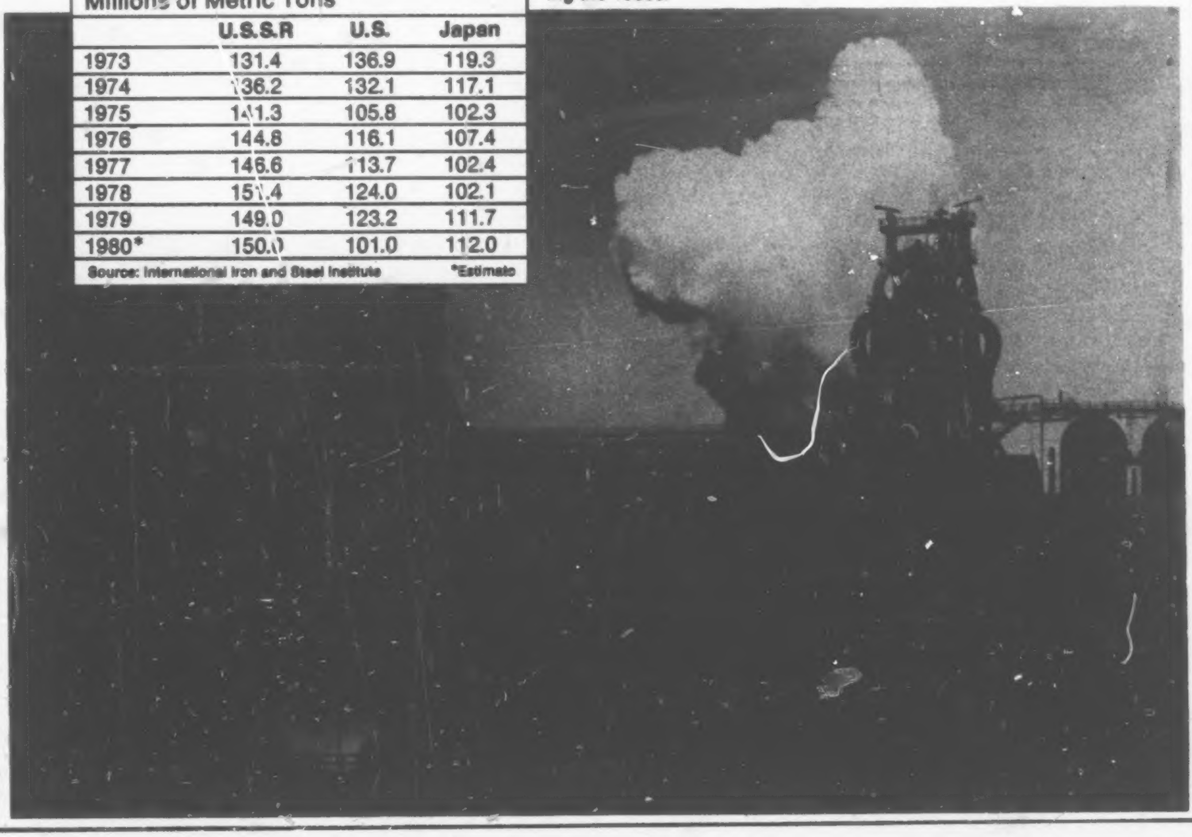
The Russian metals expert indicates that much attention is being given to the prospect for saving of raw materials, fuel, materials and

How Steel Outputs Compare

Raw Steel Production, Millions of Metric Tons

	U.S.S.R	U.S.	Japan
1973	131.4	136.9	119.3
1974	136.2	132.1	117.1
1975	141.3	105.8	102.3
1976	144.8	116.1	107.4
1977	146.6	113.7	102.4
1978	151.4	124.0	102.1
1979	149.0	123.2	111.7
1980*	150.0	101.0	112.0

Source: International Iron and Steel Institute *Estimate



Magnitogorsk Iron & Steel Works on the eastern slopes of the Ural Mountains was built during the 1930s.

Trends in Metalproducing

In its continuing coverage of metal producing *Iron Age* has, since the start of 1980, published the following articles:

Scrap Processors Invest Heavily in Technology
Jan. 7, '80, p. MP-9
Electric Furnace Succeeds in Technology and Profit
Feb. 4, '80, p. MP-7
U.S. Coke Oven Capacity Reaches the Crisis Stage
Mar. 3, '80, p. MP-5
Foundry Industry's Push to 'Start-to-Finish' Castings
April 7, '80, p. MP-7
Mini-Mills Are Making Noises in a Big Way
May 5, '80, p. MP-5
Three Forces Shaped Development of Steel Rolling
June 2, '80, p. MP-3
Steelmakers Are Attracted To New Forms of Heat Recuperation
July 7, '80, p. MP-1
Is World Iron Ore Capacity Overbuilt?
Aug. 4, '80, p. MP-3
In Search of Excellence in Steel—the Star Performers
Sept. 1 '80, p. MP-1
Roll Makers Roll With the Marketplace Changes
Oct. 6, '80, p. MP-7
Search Is On For Better Refractories
Nov. 3, '80, p. MP-7
Allegheny Ludlum at Leading Edge of Pollution Control
Dec. 1, '80, p. MP-6
Steel Producers Search for a Hot Connection
Jan. 5 '81, P. MP-7

metal products.

"Calling for an all-round solution," he indicates, "are losses of metal during production; a limited range of products; an insufficiently high level of the physical and mechanical properties of rolled products; high metal consumption in engineering and metalworking; and limitations of the technologies used at the various stages of producing and working of metal.

"According to some experts," he adds, "there would be no talk about shortage of metal with the economical use of the metal produced."

The trends in the development of Soviet metallurgy can be judged by the new projects taking place in the USSR, notes Professor Kalinnikov.

"It's worth mentioning," he says, "that among the largest projects of the recent year (1980) was the first stage, now being prepared for launching, of the oxygen converter plant of the Cherepovets iron and steel works—in the north of European Russia—with two 350-ton converters. The third converter of the same capacity is now being manufactured at the Agovstal plant in the Ukraine.

"The productivity of the plant with two already operating converters will double when it becomes operational. Production of structural steel, ship sheet and welded pipes will grow correspondingly. An oxygen-converter plant is being built at the iron and steel works in the city of Dneprodzerzhinsk, the Ukraine. These will be equipped with bottom blown blast units.

The first stage of the sheet carbon steel cold-rolling mill was put into operation early in 1980 at the Novolipetsk iron and steel works in central European Russia. Its capacity is one million tons of sheet a year. The plant's full capacity is 3 million tons a year.

"Continuously-cast slabs are rolled by the method of non-stop rolling with a speed of over 100 kilometers an hour," says Dr. Kalinnikov.

"Production processes have been automated. Finished product in the form of high-quality sheet is turned out for the auto, tractor and other metal-using industries.

"A continuous annealing section will soon be launched into operation," he points out. "This will increase the sheet output to 1.5 million tons a year. Production of chromium-plated sheet has been started at the Lysva metallurgical plant.

And preparations are under way for the beginning of production of galvanized steel strip with polymeric coatings.

Dr. Kalinnikov indicates that construction of the Oskol electrometallurgical plant at the center of the European region is continuing.

It has a built-in capacity of 7.5 million tons of oxidized and 5 million tons of metal-coated pellets; about 3.5 million tons of steel and; in the product area, 2.7 million tons of bars and sheets for the manufacture of bearings, boilers, automobile springs, industrial springs and other products. At the plant it is planned to metallize oxidized pellets in shaft furnaces through the Midrex system and then remelt them in 100-ton and 200-ton electric furnaces.

The three most important developments in Russian steelmaking, according to the technology expert, are electric steelmaking; oxygen converter production (including the use of bottom blowing); and continuous casting.

"Electric steel melting processes in special-purpose metallurgy are being perfected," he notes. "Therefore, with the use of electroslag remelting, the mass of sorted ingots reaches 8 tons to 10 tons, slab ingots 40 tons to 50 tons and forging ingots—125 tons. It's expected to soon be able to produce forging ingots with a mass of up to 200 kilograms.

On the quality question, Dr. Kalinnikov notes that to boost it use is made of cast iron subjected to desulfurization outside of a blast furnace, liquid steel is treated by vacuum, synthetic slags, inert gases and powder-like reagents.

Dr. Kalinnikov also maintains that development of metallized raw materials also serves the aim of improving the quality of the steel.

"Conditions are being created at the same time on this basis," he says, "for setting up nuclear-metallurgical complexes which make for a 50 pct reduction in the consumption of organic fuel and a lessening of environmental pollution."

In the field of rolling, the Russian metallurgist notes, "Efforts are concentrated on raising the precision of rolling; expanding the use of thermal treatment of steel rolled stock; and producing rolled stock of higher strength, corrosion-proof and with protective coating.

"Certain successes have been accomplished in resolving these tasks," the Russian expert notes, "Between 1976 and 1980, the output of cold-rolled sheet grew by 20 pct, and hot-rolled sheet with a thickness under 2.0 mm by 40 pct.

It's planned to start turning out 500 new grades of steel and alloy, and 1,200 high-precision shapes of rolled products."

Overcoming the lag in the development of powder metallurgy is regarded as one of the most important tasks in boosting production efficiency in both ferrous metallurgy and in the metalworking industries within the USSR. ☐

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EFFECTIVE JAN. 19, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	251	251	257	269
Buffalo	47	49	45	65
Pittsburgh	392	366	426	361
Youngstown	116	111	116	119
Cleveland	146	142	153	160
Detroit	175	169	165	173
Chicago	607	613	614	563
Cincinnati	111	109	99	101
St. Louis	89	99	101	67
Southern	271	265	255	244
Western	146	153	145	154
U.S. Production	2,351	2,327	2,376	2,276

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective January 19, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,351	2,327	5,668	5,692
Capability Utilization Rate	79.6	78.8	79.0	79.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 2/2/81)	23.362	22.901	22.286	21.038
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.83	$ 98.83	$103.17	$ 98.50
No. 2 bundles	$ 71.50	$ 72.17	$ 75.83	$ 61.50

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$104.50	$105.50	$100.50
No. 1 steel, Philadelphia	96.50	96.50	96.50	98.50
No. 1 steel, Chicago	95.50	95.50	107.50	96.50
No. 1 bundles, Detroit	88.50	88.50	102.50	95.50
Low Phos., Youngstown	104.50	104.50	115.50	109.50
No. 1 mach'y cast., Pgh	104.50	104.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	147.50

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* Finished Steel Cosite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective January 19, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.45-89.00	86.60-89.00	1/19/81
Lead	34.00	37.00	1/13/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$566.75
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$360-$375
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$14.90
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Jan. 12—672.87
Jan. 13—657.68
Jan. 14—650.13
Jan. 15—640.10
Jan. 16—643.95

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	83	73¾
Yellow brass	70⅝	65½
Red brasss	76⅜	69⅞
Comm. bronze	78⅛	71⅛
Mang. bronze	69⅜	67⅝
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	78
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No 1 copper wire	74
No. 2 copper wire	62
Light copper	53
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	39
Hvy. yellow brass turnings	30
Radiators	53

Aluminum

New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	57	—58
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	19	—20
Whole batteries	8	—9
Type metal	20	—21
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE JAN. 19, 1981

MATERIALS NEWSFRONT

(Effective January 19, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	89.00 to 90.00
No. 1 dealer bundles	112.00 to 113.00
No. 1 factory bundles (auto)	112.00 to 113.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	113.00 to 114.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	115.00 to 116.00
Heavy turnings	89.00 to 90.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	113.00 to 114.00
RR specialties	122.00 to 123.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 725.00
18-8 turnings	620.00 to 625.00

Chicago

No. 1 hvy. melting	$ 95.00 to $ 96.00
No. 2 hvy. melting	90.00 to 91.00
No. 1 dealer bundles	106.00 to 107.00
No. 1 factory bundles (auto)	112.00 to 113.00
No. 2 dealer bundles	75.00 to 76.00
Unburned bundles	65.00 to 66.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	108.00 to 109.00
Machine shop turn	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	69.00 to 70.00
Low phos. forge crop	119.00 to 120.00
Low. phos. punchings plate ¼ in. and heavier	126.00 to 127.00
Low phos. 2 ft. and under	121.00 to 122.00
No.1 RR hvy. melting	103.00 to 104.00
Scrap rails, random lgth.	104.00 to 105.00
Reroller rails	127.00 to 128.00
Rails, 2 ft. and under	135.00 to 136.00
RR couplers and knuckles	122.00 to 123.00
RR car axles	153.00 to 154.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	111.00 to 112.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	83.00 to 86.00
No. 1 dealer bundles	112.00 to 115.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	112.00 to 115.00
Shredder scrap	102.00 to 105.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	60.00 to 63.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	95.00 to 98.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to $ 81.00
No. 2 hvy. melting	79.00 to 80.00
No. 1 dealer bundles	90.00 to 91.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	86.00 to 87.00
Drop forge flashings	80.00 to 81.00
Machine shop turn.	31.00 to 32.00
Mixed borings and turn.	28.00 to 29.00
Shoveling turnings	31.00 to 32.00
Cast iron borings	40.00 to 41.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	68.00 to 69.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	104.00 to 105.00
Electric furnace bundles	104.00 to 105.00
Galvanized bundles	91.00 to 92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	114.00 to 115.00
Low phos. punchings plate	114.00 to 115.00
Drop forge flashings	59.00 to 60.00
Foundry steel, 2 ft. & under	95.00 to 96.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	130.00 to 131.00
Rails, 18 in. and under	131.00 to 132.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	95.00 to 96.00
Structural and plate, 2 ft. and under	103.00 to 104.00
Rails, 2 ft. and under	81.00 to 82.00
Scrap rails, random lgth.	61.00 to 62.00
No. 1 machinery cast	111.00 to 112.00
No. 1 cupola cast	79.00 to 80.00

St. Louis

No. 1 hvy. melting	$ 91.00 to $ 92.00
No. 2 hvy. melting	79.00 to 80.00
Foundry steel, 2 ft.	79.00 to 80.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	74.00 to 75.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	91.00 to 92.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 93.00 to $ 94.00
No. 2 heavy melting	86.00 to 87.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	72.00 to 73.00
No. 1 busheling	94.00 to 95.00
Shredder scrap	102.00 to 104.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	84.00 to 85.00
Structural and plate, 2 ft.	112.00 to 113.00
Structural and plate, 4 ft.	104.00 to 105.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	98.00 to 99.00
Rails, 18 in. and under	118.00 to 119.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	103.00 to 104.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 71.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 dealer bundles	89.00 to 90.00
No. 2 bundles	47.00 to 48.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	101.00 to 102.00
Rails, 2 ft. and under	120.00 to 121.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 54.00 to $ 56.00
No. 2 hvy. melting	49.00 to 51.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	640.00 to 660.00
18-8 turnings	540.00 to 560.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to $ 75.00
No. 2 hvy. melting	65.00 to 67.00
No. 1 dealer bundles	79.00 to 81.00
No. 2 bundles	42.00 to 44.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	24.00 to 26.00
No 1 machinery cast	140.00 to 145.00
Mixed cupola cast	75.00 to 77.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	79.00 to 81.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 dealer bundles	59.00 to 61.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	67.00 to 69.00
No. 2 dealer bundles	51.00 to 53.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	73.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	30.00
Mixed bor. and turn.	33.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	94.00 to 95.00
No. 2 bundles	58.00 to 59.00
Machine shop turn.	23.00 to 24.00
Crushed turnings	53.00 to 54.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	119.00 to 121.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	105.00 to 106.00

EFFECTIVE JAN. 12, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	251	250	257	273
Buffalo	49	45	42	60
Pittsburgh	366	399	439	386
Youngstown	111	110	111	130
Cleveland	142	156	147	157
Detroit	169	148	162	169
Chicago	613	612	614	543
Cincinnati	109	114	102	86
St. Louis	99	80	102	69
Southern	265	255	242	247
Western	153	140	140	153
U.S. Production	2,327	2,309	2,358	2,273

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective January 12, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,327	2,309	3,317	3,325
Capability Utilization Rate	78.8	78.2	78.6	78.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/1/81)	22.901	22.901	22.286	20.547
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.83	$ 98.83	$103.17	$ 96.83
No. 2 bundles	$ 72.17	$ 72.83	$ 75.83	$ 62.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$104.50	$105.50	$ 97.50
No. 1 steel, Philadelphia	96.50	96.50	96.50	96.50
No. 1 steel, Chicago	95.50	95.50	103.50	96.50
No. 1 bundles, Detroit	88.50	94.50	101.50	89.50
Low Phos., Youngstown	104.50	106.50	115.50	101.50
No. 1 mach'y cast., Pgh.	104.50	104.50	106.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi.	129.50	129.50	127.50	147.50

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*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective January 12, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.85-89.00	87.65-89.00	1/12/81
Lead	37.00-39.00	39.00	1/5/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.55
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$562.00
Indium, 99.9%, per troy oz	$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$350-$365
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz	$15.25
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Jan. 5—662.06
Jan. 6—673.89
Jan. 7—676.23
Jan. 8—672.82
Jan. 9—664.42

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	83⅜	74⅛
Yellow brass	71	65⅞
Red brass	76¾	70¼
Comm. bronze	78⅝	71½
Mang. bronze	69¾	68
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	80
No. 2 copper wire	67
Light copper	58

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	63
Light copper	54
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	39
Hvy. yellow brass turnings	30
Radiators	53

Aluminum		
New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	57	—58
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	19	—20
Whole batteries	8	—9
Type metal	20	—21
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE JAN. 12, 1981

MATERIALS NEWSFRONT

(Effective January 12, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	89.00 to 90.00
No. 1 dealer bundles	112.00 to 113.00
No. 1 factory bundles (auto)	112.00 to 113.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	113.00 to 114.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	115.00 to 116.00
Heavy turnings	89.00 to 90.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	113.00 to 114.00
RR specialties	122.00 to 123.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 725.00
18-8 turnings	620.00 to 625.00

Chicago

No. 1 hvy. melting	$ 95.00 to $ 96.00
No. 2 hvy. melting	90.00 to 91.00
No. 1 dealer bundles	106.00 to 107.00
No. 1 factory bundles (auto)	112.00 to 113.00
No. 2 dealer bundles	77.00 to 78.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	109.00 to 110.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	69.00 to 70.00
Low phos. forge crop	119.00 to 120.00
Low. phos. punchings plate ¼ in. and heavier	125.00 to 126.00
Low phos. 2 ft. and under	121.00 to 122.00
No.1 RR hvy. melting	103.00 to 104.00
Scrap rails, random lgth.	108.00 to 109.00
Reroller rails	127.00 to 128.00
Rails, 2 ft. and under	135.00 to 136.00
RR couplers and knuckles	122.00 to 123.00
RR car axles	153.00 to 154.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	111.00 to 112.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 95.00 to $ 98.00
No. 2 hvy. melting	83.00 to 86.00
No. 1 dealer bundles	112.00 to 115.00
No. 2 dealer bundles	63.00 to 66.00
No. 1 busheling	112.00 to 115.00
Shredder scrap	102.00 to 105.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	60.00 to 63.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	98.00 to 101.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to $ 81.00
No. 2 hvy. melting	79.00 to 80.00
No. 1 dealer bundles	88.00 to 89.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	85.00 to 86.00
Drop forge flashings	80.00 to 81.00
Machine shop turn.	29.00 to 30.00
Mixed borings and turn.	26.00 to 27.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	40.00 to 41.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	68.00 to 69.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	104.00 to 105.00
Electric furnace bundles	104.00 to 105.00
Galvanized bundles	91.00 to 92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	114.00 to 115.00
Low phos. punchings plate	114.00 to 115.00
Drop forge flashings	59.00 to 60.00
Foundry steel, 2 ft. & under	95.00 to 96.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	130.00 to 131.00
Rails, 18 in. and under	131.00 to 132.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	95.00 to 96.00
Structural and plate, 2 ft. and under	103.00 to 104.00
Rails, 2 ft. and under	81.00 to 82.00
Scrap rails, random lgth.	61.00 to 62.00
No. 1 machinery cast	111.00 to 112.00
No. 1 cupola cast	79.00 to 80.00

St. Louis

No. 1 hvy. melting	$ 91.00 to $ 92.00
No. 2 hvy. melting	79.00 to 80.00
Foundry steel, 2 ft.	79.00 to 80.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	74.00 to 75.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	91.00 to 92.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 96.00 to $ 97.00
No. 2 heavy melting	91.00 to 92.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	72.00 to 73.00
No. 1 busheling	96.00 to 97.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	37.00 to 38.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	48.00 to 49.00
Electric furnace bundles	97.00 to 98.00
Elec. furnace, 3 ft. & under	87.00 to 88.00
Structural and plate, 2 ft.	115.00 to 116.00
Structural and plate, 4 ft.	104.00 to 105.00
No. 1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth.	101.00 to 102.00
Rails, 18 in. and under	119.00 to 120.00
Angles and splice bars	105.00 to 106.00
No. 1 cupola cast	103.00 to 104.00
Unstripped motor blocks	80.00 to 81.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 71.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 dealer bundles	89.00 to 90.00
No. 2 bundles	47.00 to 48.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	101.00 to 102.00
Rails, 2 ft. and under	120.00 to 121.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 54.00 to $ 56.00
No. 2 hvy. melting	49.00 to 51.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	640.00 to 660.00
18-8 turnings	540.00 to 560.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to $ 75.00
No. 2 hvy. melting	65.00 to 67.00
No. 1 dealer bundles	79.00 to 81.00
No. 2 bundles	42.00 to 44.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	83.00 to 85.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	24.00 to 26.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	75.00 to 77.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 92.00 to $ 94.00
No. 2 hvy. melting	82.00 to 84.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 dealer bundles	62.00 to 64.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 83.00 to $ 85.00
No. 2 hvy. melting	73.00 to 75.00
No. 1 dealer bundles	70.00 to 72.00
No. 2 dealer bundles	54.00 to 56.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	115.00 to 120.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	87.00 to 89.00
No. 2 bundles	74.00 to 76.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	77.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	30.00
Mixed bor. and turn.	33.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	94.00 to 95.00
No. 2 bundles	58.00 to 59.00
Machine shop turn.	23.00 to 24.00
Crushed turnings	53.00 to 54.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	125.00 to 120.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	105.00 to 106.00

STEEL PRICES

Codes identify Producers listed in the Key on page 80. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	22.45

Structurals

Carbon, East	
B3(2)	19.90
U1	19.90
Midwest	
A7, N4	19.90
J3, C20	19.90
W8	19.90
I3, T10, U1	19.90
West	
C6	21.10
U1	20.40
B3	21.10
B3	20.60
South	
A8, C16, U1	19.90
T10	19.90
High-Strength, Low Alloy, East	
B3(2)	19.90
U1	19.90
Midwest	
N4	19.90
W8	19.90
J3	19.90
U1	19.90
I3	19.90
West	
U1, A7	20.40
B3	20.60
B3	21.10
South	
U1, C16	19.90
Wide Flange, Carbon, East	
B3	19.90
U1, A7	19.90
Midwest	
U1	19.90
N4	19.90
I3	19.90
West	
U1	20.40
C6	20.15
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
D1	19.50
S1, J3	19.50
W3	19.50
N4	17.50
W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	19.50
B3	21.75
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	26.10
R7, S10, B4	24.80
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	29.75
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	17.35
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	27.55
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.95
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	39.25
R7	32.75
B4	27.80
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	35.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	20.00
K1	18.95
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	24.30
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	23.40
Long-Terne, Midwest	
W5	24.40
A7, U1	25.85
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	18.10
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$23.31
U1	24.94
Midwest	
B3	$23.31
U1	24.94
J3	23.31
M11	24.94
W3	24.94
W5	23.31
West	
K1	$23.81
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$18.89
B3, J3	18.25
U1	19.89
W3	19.89
W5	18.25
West	
K1	$18.75
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$20.60
Midwest	
J3	$20.60
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$20.60
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$16.17
Midwest	
M11	$16.82
W5, U1	17.30
J3	15.50
W3	16.82
W5	16.17
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	20.60
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	27.65
C2	23.025
M9, W10, T11, S8	27.15
N1	24.475
R4	22.25
M1	23.025
B4, C10	27.25
Midwest	
B5, W10, L2, Y1, W8, R3	29.50
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	27.15
West	
B5	26.50
B5	29.50
B6	19.25
R3	30.45-33.40
South	
B5	16.80
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	24.85
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	31.15
T11, S8	30.60
C10	30.60
Midwest	
B5, R3, L2, C10	33.20
C2	28.275
J3, M9, W10	30.60
P3	22.75
B1	22.70
W8, N9	24.15
L2	29.40
West	
R3	34.55-36.60
B5	31.95
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45c

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	21.50
L4	21.50
P2	21.50
U1	21.50
J3	21.50
Midwest	
A7, B3, G3, J3, R3, G2, S1	21.50
I3, U1, W8, I4, W5	21.50
J3	21.50
West	
A7	21.75
U1	21.50
B3	21.50
C6	21.50
O2	21.50
K1	21.75
South	
R3	21.50
A7	21.50
U1	21.50
Alloy, East	
J3	29.30
P2, U1	29.30
B3(2), L4	29.30
Midwest	
W8	23.025
B3	29.30
G2, G3	29.30
I4, U1	29.30
West	
B3	29.30
O2	29.30
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	22.20
K2	22.20
South	
U1	25.65
A8	17.60
West	
C6	21.20

STEEL PRICES

Producer Key
With Principal Offices

Code	Producer
A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp.
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		23.42	27.52	32.58	33.38	29.11	30.74	22.86	44.56	48.52	56.59	59.67	72.50
Baltimore		28.28	31.27	36.03	39.49	32.91	31.45	25.40	44.80	51.38	55.88	65.73	71.95
Birmingham		23.58	27.56	32.91	33.08	29.52	29.96	22.88	44.61	40.00	54.49	53.70	77.71
Boston		29.84	27.58	31.28	39.06	34.04	31.49	24.05	42.78	51.87	57.13	62.34	68.76
Buffalo		31.78	27.09	36.67	38.19	33.85	32.36	24.18	43.18	49.58	54.84	64.98	72.50
Chicago		24.50	28.46	30.08	30.77	27.86	27.65	19.83	38.92	45.41	51.73	55.72	61.74
Cincinnati		25.99	24.15	29.16	30.46	28.39	27.41	18.52	40.58	45.84	50.20	57.30	63.46
Cleveland		31.58	29.22	36.90	36.26	33.08	32.25	23.85	43.04	47.25	53.48	60.84	66.85
Denver		32.79	31.98	37.50	39.11	32.68	33.14	24.03	45.82	53.27	60.73	68.31	76.41
Detroit		26.44	24.48	29.44	31.63	28.27	27.43	17.91	42.75	45.53	50.24	57.99	64.36
Houston		26.40	30.13	32.95	40.44	30.79	33.18	27.01	46.49	52.69	59.78	67.38	74.39
Kansas City		24.96	27.37	31.15	31.03	29.11	28.70	23.49	41.93	48.66	54.49	61.35	67.85
Los Angeles		28.30	31.26	35.72	42.74	36.31	37.20	34.66	48.29	60.90	68.16	73.66	82.41
Memphis		24.78	27.98	33.25	34.88	28.63	29.96	22.21	42.52	50.50	56.43	63.47	73.24
Milwaukee		23.97	25.44	28.49	28.74	28.86	26.94	18.04	36.54	44.18	47.90	54.37	60.21
New York		25.15	27.57	30.95	42.58	30.29	28.69	23.98	44.90	50.95	56.22	64.93	71.11
Philadelphia		29.19	31.19	36.52	41.15	33.25	32.68	27.26	45.35	52.47	57.39	66.10	72.02
Pittsburgh		32.45	33.19	37.25	37.41	33.45	33.33	26.05	43.57	47.38	54.56	59.46	71.18
Portland		31.80	17.55	36.67	36.85	30.46	34.08	31.86	53.26	59.60	56.88	58.00	....
San Francisco		29.42	33.92	35.10	43.19	35.86	36.63	35.45	47.71	60.85	68.18	73.66	81.97
Seattle		29.38	30.97	34.73	39.68	31.21	32.67	35.97	49.86	60.91	66.18	72.05	80.61
Spokane		21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis		27.93	25.08	28.51	32.42	28.59	27.55	20.48	40.38	44.91	49.89	55.06	63.37
St. Paul		26.59	23.98	24.79	31.74	29.21	28.[illegible]	18.55	40.88	43.03	50.45	57.60	63.90

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2 15/16; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

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ARE ETHICS IN ENGINEERING UNDER ATTACK?

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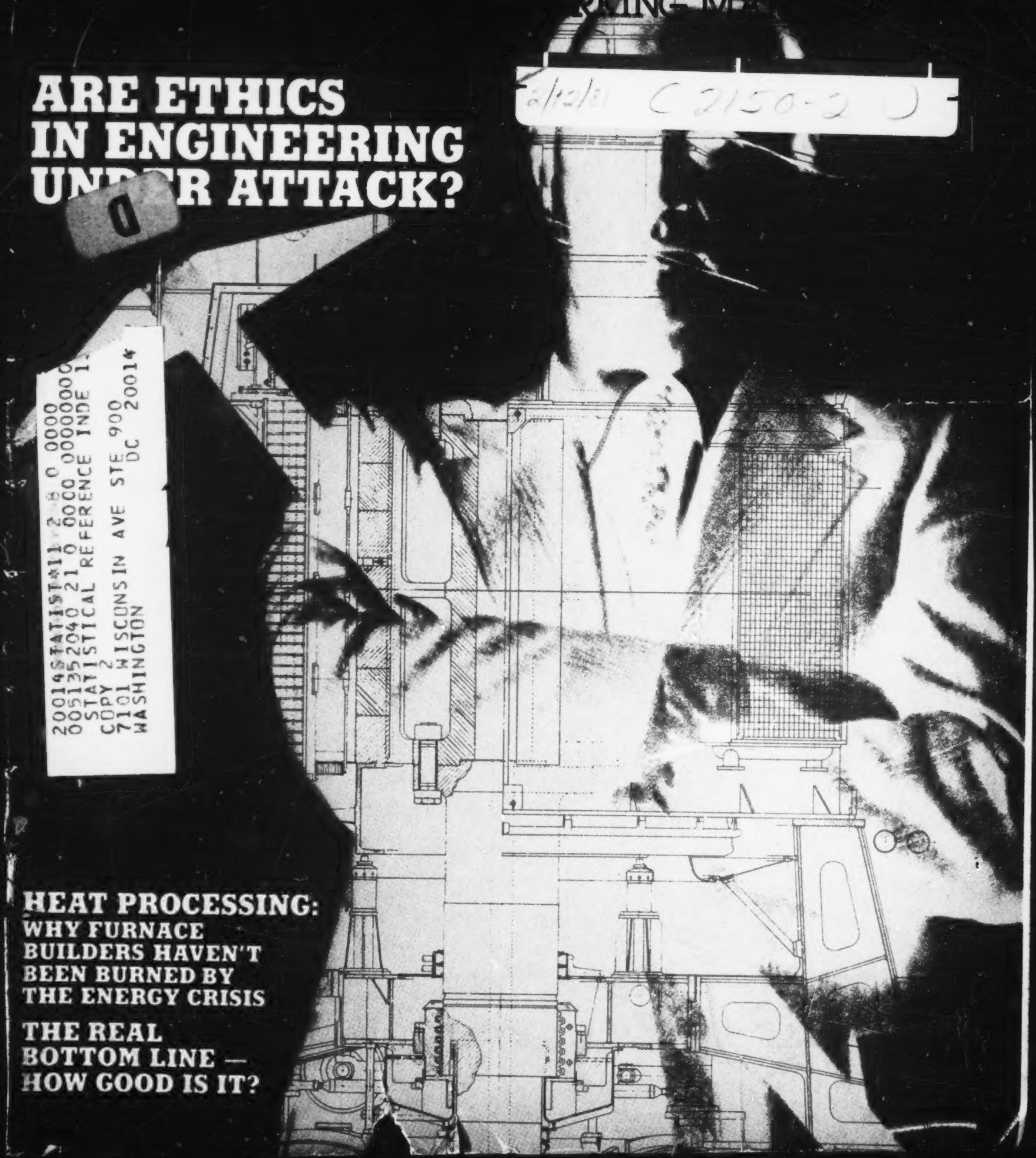

HEAT PROCESSING:
WHY FURNACE BUILDERS HAVEN'T BEEN BURNED BY THE ENERGY CRISIS

THE REAL BOTTOM LINE — HOW GOOD IS IT?

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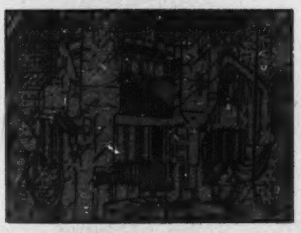

Another big year for machine tool builders.

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

DETROIT'S STILL TRYING TO REV UP ITS ENGINE

Automakers want to forget December's anemic performance.

By Bryan H. Berry and George A. Weimer

December 1980 was one month the U.S. auto industry didn't need. The prime interest rate reached a record high of 21.5 pct. Total U.S. sales of passenger cars, after recovering from a poor spring last year and climbing to almost 850,000 units in October, plunged to below 650,000 in December, 1980's worst month.

Sales of U.S. automakers' cars haven't been so low since January 1975, when a recession was to blame. December was particularly cruel to GM cars. The biggest automaker's sales dipped below the 300,000-unit monthly mark for the only time in 1980.

Trucks and buses made by U.S. companies in 1980 suffered even worse: Output dropped off the 1979 level—a good year—by 46 pct to 1.63 million units, the lowest since 1967 and below the 2-million mark for the first time since 1970.

The sales slump has had some predictable results. Plant shutdowns began at the Christmas break and will continue until sales reduce the excess inventory, which currently averages about 80 days for all American models. In addition, high interest rates are driving up the cost of carrying that inventory. Automakers prefer a stock of some 60 days.

Swelling inventories and shrinking assets have caused the automakers to postpone or cancel orders from suppliers. Steel shipments to the auto industry last year dropped by one-third off the 1979 level. Detroit went "damn flat rather suddenly," said a spokesman for a leading American steel company.

The world steel market unfortunately is just as flat and suffers similarly from an excess of supply. "There's a lot of steel and automobiles available," continued the spokesman. Steel companies are currently filling orders on short notice. However, the steel market is very volatile, and quick turnarounds are possible.

"Sales have improved from the low point of 1980," explained a spokesman for another steel company, "and volume remains at satisfactory levels. We expect continued improvement from a far-below-normal 1980."

The major suppliers of parts, machines and tools to the auto industry are feeling the same pinch. More machine tool orders were cancelled in December than in any other month in 1980, and some major suppliers expect the trend to continue.

A number of major suppliers contacted by *Iron Age* reported postponements and some cancellations of automotive orders. None reported significant problems with payments. However, one official noted wryly, "For several years, car companies have been hanging onto their cash as long as possible." The auto companies themselves weren't talking.

"We are working very close to our customers' requirements," says William E. Butler, president of the automotive components group of Eaton Corp., whose net sales of transportation products totaled $301 million in the quarter ending September 30, 1980. "When automakers shut down plants, we cut back immediately. We've had some cutback in Eaton's automotive business, but not more than anticipated."

"We've had some delays of orders from the automakers," said Bendix President John Biafore, "but not a deluge."

The number of inquiries related to automotive has dropped off. The drop-off in auto sales has led to expectations that automakers' capital spending will be affected. This anxiety may be just short-term until the automakers firm up their new capacity requirements, he said. "Hopefully, new automotive programs will materialize soon."

That hope is common to all the suppliers. The automakers were responsible for the boom in machine tool orders from mid-1978 to mid 1980. And they still have many new equipment programs underway as they build the fuel-efficient, front-wheel-drive cars

THE
NEW CHRYS
RPORATIC

Automakers and their supplies are waiting for American consumers to realize that U.S. cars are competitive with imports.

Retail Sales of Passenger Cars in the U.S.

1980	Domestic	Imports	Total
January	588,001	217,759	805,760
February	591,502	220,059	811,561
March	670,390	224,764	895,154
April	540,984	202,336	743,320
May	498,744	198,015	696,759
June	511,677	190,812	701,884
July	542,397	230,219	772,616
August	486,755	198,737	685,492
September	486,064	185,514	671,578
October	664,770	183,712	847,949
November	529,558	168,550	698,108
December	471,603	177,806	649,409
Total	**6,581,307**	**2,398,283**	**8,979,590**

they hope will put them back into the black.

And there is even a whole new growth area for suppliers to concentrate on in Detroit. No, it's not energy. It's quality and quality control.

GM particularly, but all other U.S. automakers as well have been hammering out a whole new message to suppliers, along with the older dicta of faster and cheaper and lighter. It's fits and finishes today as well.

The slump in auto sales will not last forever. In fact, it may not last through the second quarter. Meanwhile, those suppliers who are selling more than parts, paints and sheet are enjoying what's really close to a boom in Detroit business.

"The automakers' large capital spending programs are dependent on recovery," notes Mr. Biafore, "and I expect American automotive to come back strongly. I expect to beat Japan and Germany."

No one is quite sure when that recovery will happen. However, Mr. Biafore expects "the delay of major programs across the board. This is not yet confirmed, but I expect the major automakers to stretch out some programs six months to a year."

The Bendix executive clearly considers the auto sales slump and lagging orders to be short-term problems. The Federal government could help by providing tax benefits to stimulate capital investment and to allow more generous depreciation write offs. "Trade restrictions on imports might help," he adds.

But the key, of course, is not the American government but the American consumer. "Until the American customer jumps on the bandwagon and buys American-made cars, we will have anxiety about the auto market. Americans are realizing that the bad economy is impacting on them and that they should buy American. That should happen once the American consumer perceives that American cars aren't too expensive and are as good as foreign cars. The auto industry is banking that those perceptions will come soon."

The automakers and suppliers have other reasons for optimism, and many of them rest upon the performance of the new Administration.

Detroit is hoping the administration can restore the economy by lowering the prime lending rate of reducing the tax burden, reforming regulations of industry, and developing an effective fiscal policy that will curb inflation. Opinions as to whether the new administration should attempt to limit imports are mixed.

"Our answer to tough foreign competition should not be protectionism. It should be a better product," says GM chairman Roger B. Smith.

Mr. Smith echoes a widespread industry sentiment when he talks about the industry's relations with the Federal government. "With the new Administration coming to Washington," he says, "we are looking for government-business relationships to be better. I hope we've got the adversarial days behind us and that we're starting toward a more cooperative relationship with government.

"In other nations, there is an attitude of cooperation between government and business that we should have and need in the United States."

Analyst Arvid Jouppi grounds his optimism for the auto industry more "on rust than Reagan."

"We're wearing out our fleet of automobiles," he explains. "They're getting as obsolete as military hardware." Consequently, Mr. Jouppi thinks this decade will present "a tremendous opportunity for refurbishing factories. Machine re-makers will have tremendous growth."

"GM is going full speed ahead with its capital expenditures programs. It plans to spend $80 billion on new equipment in the period of 1981-90. That's 150 pct of what the entire industry spent in the decade through 1980," he says.

Mr. Jouppi forecasts that the long term upturn in auto sales that began in May 1980 will revive in March 1981. He predicts a "slow first quarter, moderate second quarter, normal third quarter and strong fourth quarter."

Automakers are trying to speed that recovery now by offering price discounts and educating potential consumers about the availability of auto loans with interest rates below the prime rate.

In the meantime, some companies heavily dependent on the auto industry are planning to become less so. "The auto industry won't be as big primarily for two reasons," said a spokesman for one major supplier. "One, the auto industry won't be making as many engine types and car sizes as before. The number of cars may rise someday, but the number of lines won't. Second, we foresee more importation of completed sub-assemblies, such as engines, as part of the world car concept.

"We're looking at other businesses we've avoided in the past; construction equipment, farm equipment and energy-related fields. Of course, these businesses won't order our products as constantly as automotive does; they're more sporadic. Also, it's harder to get into these businesses than into automotive, and they don't buy in as big chunks as the automakers do."

Other executives, such as Eaton's Mr. Butler, plan to increase their market penetration. "Increased market penetration around the world and more materials used in products should offset the drop" in orders from the automakers, he reports.

Diversification also has made Eaton less dependent on the auto industry. "Eaton would look very closely at any new investments in the auto industry," says Mr. Butler. Instead, major suppliers dependent on the auto industry are following the automakers' lead once more—and diversifying to cushion themselves against future shocks. ☐

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EFFECTIVE JAN. 26, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	245	251	257	288
Buffalo	50	47	48	61
Pittsburgh	429	392	408	371
Youngstown	117	116	109	130
Cleveland	159	146	150	166
Detroit	178	175	170	195
Chicago	634	607	594	594
Cincinnati	111	111	98	95
St. Louis	87	89	101	67
Southern	254	271	263	258
Western	142	146	139	154
U.S. Production	2,406	2,351	2,337	2,379

Source: American Iron & Steel institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective January 26, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1980	To Date 1979
Net tons, in thousands	2,406	2,351	8,074	8,077
Capability Utilization Rate	80.4	79.6	78.7	79.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 2/2/81)	23.362	23.362	22.901	21.038
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 97.83	$ 98.83	$100.17	$ 98.50
No. 2 bundles	$ 70.83	$ 71.50	$ 75.83	$ 62.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$104.50	$ 99.50	$100.50
No. 1 steel, Philadelphia	93.50	96.50	96.50	98.50
No. 1 steel, Chicago	95.50	95.50	104.50	96.50
No. 1 bundles, Detroit	92.50	88.50	102.50	95.50
Low Phos., Youngstown	104.50	104.50	106.50	109.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	145.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective January 26, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	84.95-87.00	84.40-87.00	1/26/81
Lead	32.00	34.00	1/19/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$528.50
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$365-$380
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$14.27
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Jan. 19—Holiday
Jan. 20—619.52
Jan. 21—627.05
Jan. 22—624.97
Jan. 23—621.90

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68⅛	63
Red brass	73⅞	67⅜
Comm. bronze	75⅝	68⅝
Mang. bronze	67⅛	65⅜
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	64
Light copper	55

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	60
Light copper	51
No. 1 composition	69
No. 1 comp. turnings	68
Hvy. yellow brass solids	38
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	57	—58
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	16	—17
Whole batteries	7	—8
Type metal	17	—18
Electrotype	28	—29
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE JAN. 26, 1981

MATERIALS NEWSFRONT

(Effective January 26, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	112.00 to	113.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	120.00 to	121.00
Heavy turnings	89.00 to	90.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	110.00 to	111.00
RR specialties	118.00 to	119.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	106.00 to	107.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 dealer bundles	75.00 to	76.00
Unburned bundles	65.00 to	66.00
No. 1 busheling	99.00 to	100.00
Shredder scrap	108.00 to	109.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	119.00 to	120.00
Low. phos. punchings plate ¼ in. and heavier	126.00 to	127.00
Low phos. 2 ft. and under	122.00 to	123.00
No.1 RR hvy. melting	103.00 to	104.00
Scrap rails, random lgth.	104.00 to	105.00
Reroller rails	127.00 to	128.00
Rails, 2 ft. and under	135.00 to	136.00
RR couplers and knuckles	122.00 to	123.00
RR car axles	153.00 to	154.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	111.00 to	112.00
Steel car wheels	121.00 to	122.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 92.00 to	$ 95.00
No. 2 hvy. melting	80.00 to	83.00
No. 1 dealer bundles	111.00 to	114.00
No. 2 dealer bundles	61.00 to	64.00
No. 1 busheling	111.00 to	114.00
Shredder scrap	99.00 to	102.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	60.00 to	63.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	122.00 to	125.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	94.00 to	97.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	92.00 to	93.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	88.00 to	89.00
Drop forge flashings	80.00 to	81.00
Machine shop turn.	31.00 to	32.00
Mixed borings and turn.	28.00 to	29.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	41.00 to	42.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	68.00 to	69.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	104.00 to	105.00
Electric furnace bundles	104.00 to	105.00
Galvanized bundles	91.00 to	92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	124.00 to	125.00
Low phos. punchings plate	124.00 to	125.00
Drop forge flashings	59.00 to	60.00
Foundry steel, 2 ft. & under	95.00 to	96.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	15.00 to	16.00
Mixed bor. and turn.	24.00 to	25.00
Shoveling turnings	26.00 to	27.00
Cast iron borings	24.00 to	25.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	80.00
Foundry steel, 2 ft.	79.00 to	80.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	74.00 to	75.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 93.00 to	$ 94.00
No. 2 heavy melting	86.00 to	87.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	94.00 to	95.00
Shredder scrap	102.00 to	104.00
Machine shop turn.	35.00 to	36.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Electric furnace bundles	96.00 to	97.00
Elec. furnace, 3 ft. & under	84.00 to	85.00
Structural and plate, 2 ft.	112.00 to	113.00
Structural and plate, 4 ft.	104.00 to	105.00
No. 1 RR hvy. melting	96.00 to	97.00
Scrap rails, random lgth.	98.00 to	99.00
Rails, 18 in. and under	118.00 to	119.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	103.00 to	104.00
Unstripped motor blocks	75.00 to	76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 71.00
No. 2 hvy. melting	65.00 to	66.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	101.00 to	102.00
Rails, 2 ft. and under	120.00 to	121.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 54.00 to	$ 56.00
No. 2 hvy. melting	49.00 to	51.00
No. 2 dealer bundles	41.00 to	43.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to	$ 75.00
No. 2 hvy. melting	65.00 to	67.00
No. 1 dealer bundles	79.00 to	81.00
No. 2 bundles	42.00 to	44.00
No. 1 busheling	79.00 to	81.00
Shredder scrap	83.00 to	85.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	24.00 to	26.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	75.00 to	77.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 87.00 to	$ 89.00
No. 2 hvy. melting	77.00 to	79.00
No. 1 dealer bundles	72.00 to	74.00
No. 2 dealer bundles	57.00 to	59.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 78.00 to	$ 80.00
No. 2 hvy. melting	68.00 to	70.00
No. 1 dealer bundles	65.00 to	67.00
No. 2 dealer bundles	48.00 to	50.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 96.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	87.00
No. 2 bundles	72.00 to	74.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	73.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	30.00
Mixed bor. and turn.	33.00
Cast scrap	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	23.00 to	24.00
Crushed turnings	53.00 to	54.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	119.00 to	121.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	105.00 to	106.00

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Chilton's

FEBRUARY 23, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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ANOTHER BIG YEAR FOR MACHINE TOOL BUILDERS

SPECIAL INTEREST GROUPS: HOW GREAT A MENACE?

MANUFACTURING SYSTEM SERIES: 13 A BILLION DOLLAR MARKET TAKES SHAPE

IRON AGE

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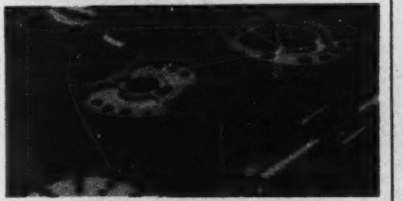

Fluid power gets set for growth over the long haul.

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING ORDER TRENDS

It was a flip-flop year, but orders ended it on the flip side

Durables new orders last year took a wild ride on a roller-coaster.

From a heady $81.5 billion volume in January, orders plummeted to $66.5 billion in June, and then climbed to $82.5 billion in the final month of the year.

The softness in the mid-year period hurt. Total dollar volume of new orders received by durable goods producers for the year as a whole amounted to $915.9 billion. That was down 1.1 pct from 1979.

Of course, those figures as reported by the U.S. Commerce Dept., are in current dollars. After allowance is made for price rises in durable goods lines, the decline in orders in 1980 was about 10 pct.

These figures are a reflection of just how well U.S. metalworking industries fared last year. Metalworking accounts for about 85 pct of durable goods orders.

There were sharp variances in how well metalworking industries did in 1980. The fall in auto sales alone pulled the entire durable goods sector into the red as far as orders are concerned. If autos are excluded from the durables total, then orders last year were up 1.6 pct from 1979.

The most hopeful perspective for orders comes from a look at the final four months of last year. Orders in August totaled $72.2 billion. And in the next four months, orders climbed a stairway—to $79.0 billion, $80.7 billion, $81.0 billion and $82.5 billion.

Significantly, the dollar-value pace of orders in those final four months of last year stayed just a bit ahead of the durable goods inflation rate. In sum, orders were moving to an upbeat tempo as 1981 opened.

Another good sign as one year ended and another started, was the tight control noted on inventories. In the August-to-December period, the rise in orders received by durable goods producers came to more than 14 pct; inventories held by those producers rose by less than 1 pct.

Lean stocks, of course, are a good sign of possible continued orders strength. Soon, orders for refilling stocks may join orders to meet current market demand.

One element of durables new orders that has not shown a strong rally from 1980 mid-year lows is capital goods.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$295.0 *	$296.2	$284.3
Manufacturing, Total	4th Qtr.	115.4 *	116.4	106.6
Manufacturing, Durable Goods	4th Qtr.	57.4 *	58.2	55.0
Mining Industry	4th Qtr.	15.3 *	13.9	11.9
Key Indicators, Durable Goods Manufacturing				
New Orders	Dec.	82.5	81.0	77.2
Shipments	Dec.	79.5	79.7	74.2
Inventories	Dec.	161.9	161.0	151.7
Unfilled Orders	Dec.	280.1	277.1	267.9
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Dec.	21.6	21.8	23.9
Capital Goods Producers, Defense Industries	Dec.	5.7	4.5	3.4
Primary Metals, Total	Dec.	12.8	13.0	11.4
Steel (SIC 331)	Dec.	6.8	7.1	5.0
Iron & Steel Castings (SIC 332)	Dec.	1.1	1.0	1.2
Nonferrous Metals	Dec.	4.9	4.9	5.2
Nonelectrical Mach.-Equip. Industries, Total	Dec.	14.9	14.8	14.1
Engines & Turbines	Dec.	.9	1.3	.9
Farm Machinery & Equipment (Shipments)	Dec.	1.1	1.2	1.2
Construction, Mining & Materials Hdlg. Equip.	Dec.	3.0	2.5	3.0
General Industrial Machinery	Dec.	1.2	1.2	1.0
Fluid Power Equipment** (Index-1972=100)	Dec.	266	241	228
Metalworking Machinery	Dec.	1.0	.8	.9
Machine Tools, Total (Millions $, Unadjusted)	Dec.***	301.7	329.1	402.3
Machine Tools, Metal-Cutting	Dec.***	247.4	275.0	304.1
Machine Tools, Metal-Forming	Dec.***	54.3	54.1	98.2
Electrical Mach. & Equip. Industries, Total	Dec.	10.4	11.5	10.1
Elec. Transmission Equip. & Industrial Apparatus	Dec.	1.9	1.8	1.7
Household Appliances	Dec.	1.1	1.2	1.1
Communication Equipment	Dec.	3.3	3.9	3.3
Transportation Equip. Industry, Total	Dec.	17.2	16.0	17.4
Motor Vehicles & Parts (Shipments)	Dec.	9.5	9.7	9.0
Aircraft, Missiles & Parts	Dec.	5.0	4.6	6.5
Shipbuilding & Military Tanks	Dec.	1.8	.6	1.1
Fabricated Metal Products, Total	Dec.	10.5	9.9	9.6
Instruments, Total	Dec.	4.0	3.6	3.3

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

EFFECTIVE FEB. 2, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	245	245	237	272
Buffalo	48	50	40	68
Pittsburgh	428	429	386	391
Youngstown	123	117	87	133
Cleveland	171	159	152	160
Detroit	178	178	159	190
Chicago	628	634	574	598
Cincinnati	112	111	99	96
St. Louis	91	87	66	69
Southern	261	254	270	253
Western	148	142	132	165
U.S. Production	2,433	2,406	2,202	2,395

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 73.66*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*73.66¢—Cleveland-Cliffs as of 2/15/80, Hanna as of 1/31/80, Oglebay Norton as of 2/11/80; 67.8¢—Pickands Mather as of 3/6/80 and U. S. Steel as of 2/22/80.

Steel Production, Composite Prices

(Effective February 2, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,433	2,406	10,507	10,505
Capability Utilization Rate	81.3	80.4	79.2	80.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 2/2/81)	23.362	23.362	22.901	21.038
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 97.50	$ 97.83	$ 97.17	$101.17
No. 2 bundles	$ 71.17	$ 70.83	$ 74.17	$ 63.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$104.50	$ 99.50	$103.50
No. 1 steel, Philadelphia	91.50	93.50	96.50	103.50
No. 1 steel, Chicago	96.50	95.50	95.50	96.50
No. 1 bundles, Detroit	94.50	92.50	94.50	95.50
Low Phos., Youngstown	104.50	104.50	106.50	109.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	145.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective February 2, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	85.50-86.00	84.25-86.00	2/ 2/81
Lead	32.00	34.00	1/19/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$25.00
Gold per troy oz	$493.50
Indium, 99.9%, per troy oz	$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb	$1.67
Mercury, per 76-lb. f.o.b. N.Y	$365-$380
Molybdenum, lb. Tech moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$200
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$13.40
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per picul.)

Jan. 26—616.43
Jan. 27—616.71
Jan. 28—621.64
Jan. 29—622.66
Jan. 30—619.08

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	81	71¾
Yellow brass	68¾	63½
Red brass	74⅜	67⅞
Comm. bronze	76¼	69⅛
Mang. bronze	67⅝	65⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	77
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	61
Light copper	52
No. 1 composition	69
No. 1 comp. turnings	68
Hvy. yellow brass solids	38
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	40	—41
Old sheet	37	—38
Old cast	37	—38
Clean dry borings	38	—39

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	44	—45
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	67	—68
No. 2 copper wire	56	—57
Light copper	54	—55
Radiators	42	—43
No. 1 composition	59	—60
No. 1 composition turn'gs	56	—57
Cocks and faucets	41	—42
Clean heavy yellow brass	36	—37
Brass pipe	41	—42
New soft brass clippings	50	—51
Yellow brass rod ends	42	—43

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	28	—29

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	20	—21
Old diecast zinc	13	—14

EFFECTIVE FEB. 2, 1981

MATERIALS NEWSFRONT

(Effective February 2, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	113.00 to	114.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	116.00 to	117.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	122.00 to	123.00
Heavy turnings	89.00 to	90.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	110.00 to	111.00
RR specialties	118.00 to	119.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	91.00 to	92.00
No. 1 dealer bundles	108.00 to	109.00
No. 1 factory bundles (auto)	114.00 to	115.00
No. 2 dealer bundles	77.00 to	78.00
Unburned bundles	67.00 to	68.00
No. 1 busheling	99.00 to	100.00
Shredder scrap	105.00 to	106.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	121.00 to	122.00
Low. phos. punchings plate ¼ in. and heavier	129.00 to	130.00
Low phos. 2 ft. and under	124.00 to	125.00
No.1 RR hvy. melting	103.00 to	104.00
Scrap rails, random lgth.	94.00 to	95.00
Reroller rails	122.00 to	123.00
Rails, 2 ft. and under	129.00 to	130.00
RR couplers and knuckles	122.00 to	123.00
RR car axles	153.00 to	154.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	111.00 to	112.00
Steel car wheels	121.00 to	122.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to	$ 93.00
No. 2 hvy. melting	79.00 to	82.00
No. 1 dealer bundles	110.00 to	113.00
No. 2 dealer bundles	60.00 to	63.00
No. 1 busheling	110.00 to	113.00
Shredder scrap	98.00 to	101.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	58.00 to	61.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	122.00 to	125.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	92.00 to	95.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 81.00 to	$ 82.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	88.00 to	89.00
Drop forge flashings	83.00 to	84.00
Machine shop turn.	32.00 to	33.00
Mixed borings and turn.	29.00 to	30.00
Shoveling turnings	33.00 to	34.00
Cast iron borings	41.00 to	42.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	68.00 to	69.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	104.00 to	105.00
Electric furnace bundles	104.00 to	105.00
Galvanized bundles	91.00 to	92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	124.00 to	125.00
Low phos. punchings plate	124.00 to	125.00
Drop forge flashings	59.00 to	60.00
Foundry steel, 2 ft. & under	95.00 to	96.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	15.00 to	16.00
Mixed bor. and turn.	24.00 to	25.00
Shoveling turnings	26.00 to	27.00
Cast iron borings	24.00 to	25.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	80.00
Foundry steel, 2 ft.	79.00 to	80.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	74.00 to	75.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 93.00 to	$ 94.00
No. 2 heavy melting	86.00 to	87.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	94.00 to	95.00
Shredder scrap	102.00 to	104.00
Machine shop turn.	35.00 to	36.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Electric furnace bundles	96.00 to	97.00
Elec. furnace, 3 ft. & under	84.00 to	85.00
Structural and plate, 2 ft.	112.00 to	113.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	96.00 to	97.00
Scrap rails, random lgth.	98.00 to	99.00
Rails, 18 in. and under	118.00 to	119.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	103.00 to	104.00
Unstripped motor blocks	75.00 to	76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 71.00
No. 2 hvy. melting	65.00 to	66.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	115.00 to	116.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 53.00 to	$ 54.00
No. 2 hvy. melting	48.00 to	49.00
No. 2 dealer bundles	41.00 to	43.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	77.00 to	79.00
No. 2 bundles	38.00 to	40.00
No. 1 busheling	79.00 to	81.00
Shredder scrap	81.00 to	83.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	24.00 to	26.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	73.00 to	75.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 85.00 to	$ 87.00
No. 2 hvy. melting	75.00 to	77.00
No. 1 dealer bundles	70.00 to	72.00
No. 2 dealer bundles	55.00 to	57.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 76.00 to	$ 78.00
No. 2 hvy. melting	66.00 to	68.00
No. 1 dealer bundles	63.00 to	65.00
No. 2 dealer bundles	46.00 to	48.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 96.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	87.00
No. 2 bundles	72.00 to	74.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	77.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	40.00
Mixed bor. and turn.	33.00
Cast scrap	55.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	23.00 to	24.00
Crushed turnings	53.00 to	54.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	119.00 to	121.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	105.00 to	106.00

EFFECTIVE FEB. 9, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	256	245	250	287
Buffalo	46	48	45	67
Pittsburgh	433	428	399	413
Youngstown	123	123	110	122
Cleveland	150	171	156	157
Detroit	160	178	148	191
Chicago	623	628	612	621
Cincinnati	101	112	114	99
St. Louis	95	91	80	68
Southern	251	261	255	258
Western	148	148	140	158
U.S. Production	2,386	2,433	2,309	2,441

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.50
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective February 9, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,386	2,433	12,893	12,956
Capability Utilization Rate	79.7	81.3	79.3	80.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 2/2/81)	23.362	23.362	22.901	21.038
Pig Iron** (Net ton= 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 98.50	$ 97.50	$ 98.83	[illegible]
No. 2 bundles	$ 70.83	$ 71.17	$ 72.83	[illegible]

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$104.50	$104.50	$104.50	[illegible]
No. 1 steel, Philadelphia	91.50	91.50	96.50	103.50
No. 1 steel, Chicago	99.50	96.50	95.50	100.50
No. 1 bundles, Detroit	96.50	94.50	94.50	110.50
Low Phos., Youngstown	104.50	104.50	106.50	109.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	99.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	145.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective February 9, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	85.00-87.00	85.00-86.00	2/ 9/81
Lead	30.00	32.00	2/ 2/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$512.50
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$370-$380
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$13.25
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Feb. 2—620.02
Feb. 3—618.15
Feb. 4—621.69
Feb. 5—Holiday
Feb. 6—Holiday

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68⅛	63
Red brass	73⅜	67⅜
Comm. bronze	75⅝	68⅝
Mang. bronze	67⅛	65⅜
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	78
No. 2 copper wire	67
Light copper	58

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	63
Light copper	54
No. 1 composition	69
No. 1 comp. turnings	67

Hvy. yellow brass solids	39
Hvy. yellow brass turnings	30
Radiators	51

Aluminum

New mixed clips	40 —41
Old sheet	36 —37
Old cast	36 —37
Clean dry borings	37 —38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	42 —43
Mixed L.C. clips	34 —35
Old sheets and cast	27 —28
Boring and turnings	24 —25
Duraluminum clippings	38 —39

Copper and Brass

No. 1 copper wire	66 —67
No. 2 copper wire	55 —56
Light copper	53 —54
Radiators	41 —42
No. 1 composition	58 —59
No. 1 composition turn'gs	55 —56
Cocks and faucets	40 —41
Clean heavy yellow brass	35 —36
Brass pipe	40 —41
New soft brass clippings	49 —50
Yellow brass rod ends	41 —42

Lead

Heavy soft lead	15 —16
Whole batteries	7 — 8
Type metal	16 —17
Electrotype	28 —29

Nickel

Nickel solids	175 —190
Nickel rod ends	175 —190
Nickel sheets, clips	175 —190
Nickel turnings	130 —135

Zinc

New zinc clippings	19 —20
Old diecast zinc	12 —13

EFFECTIVE FEB. 9, 1981

MATERIALS NEWSFRONT

(Effective February 9, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	113.00 to	114.00
No. 1 factory bundles (auto)	112.00 to	113.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	116.00 to	117.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	122.00 to	123.00
Heavy turnings	89.00 to	90.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	110.00 to	111.00
RR specialties	118.00 to	119.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$ 99.00 to	$100.00
No. 2 hvy. melting	91.00 to	92.00
No. 1 dealer bundles	108.00 to	109.00
No. 1 factory bundles (auto)	114.00 to	115.00
No. 2 dealer bundles	77.00 to	78.00
Unburned bundles	67.00 to	68.00
No. 1 busheling	106.00 to	107.00
Shredder scrap	106.00 to	107.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	121.00 to	122.00
Low. phos. punchings plate ¼ in. and heavier	129.00 to	130.00
Low phos. 2 ft. and under	124.00 to	125.00
No.1 RR hvy. melting	103.00 to	104.00
Scrap rails, random lgth.	94.00 to	95.00
Reroller rails	122.00 to	123.00
Rails, 2 ft. and under	129.00 to	130.00
RR couplers and knuckles	122.00 to	123.00
RR car axles	153.00 to	154.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	111.00 to	112.00
Steel car wheels	121.00 to	122.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to	$ 93.00
No. 2 hvy. melting	79.00 to	82.00
No. 1 dealer bundles	107.00 to	110.00
No. 2 dealer bundles	59.00 to	62.00
No. 1 busheling	107.00 to	110.00
Shredder scrap	98.00 to	101.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	57.00 to	60.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	121.00 to	124.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	92.00 to	95.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 81.00 to	$ 82.00
No. 2 hvy. melting	79.00 to	80.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	91.00 to	92.00
Drop forge flashings	87.00 to	88.00
Machine shop turn.	33.00 to	34.00
Mixed borings and turn.	30.00 to	31.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	42.00 to	43.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	700.00 to	710.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	68.00 to	69.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	104.00 to	105.00
Electric furnace bundles	104.00 to	105.00
Galvanized bundles	91.00 to	92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	124.00 to	125.00
Low phos. punchings plate	124.00 to	125.00
Drop forge flashings	59.00 to	60.00
Foundry steel, 2 ft. & under	95.00 to	96.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	15.00 to	16.00
Mixed bor. and turn.	24.00 to	25.00
Shoveling turnings	26.00 to	27.00
Cast iron borings	24.00 to	25.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	80.00
Foundry steel, 2 ft.	79.00 to	80.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	74.00 to	75.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 93.00 to	$ 94.00
No. 2 heavy melting	83.00 to	84.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	93.00 to	94.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	35.00 to	36.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	48.00 to	49.00
Electric furnace bundles	94.00 to	95.00
Elec. furnace, 3 ft. & under	84.00 to	85.00
Structural and plate, 2 ft.	112.00 to	113.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	93.00 to	94.00
Scrap rails, random lgth.	96.00 to	97.00
Rails, 18 in. and under	115.00 to	116.00
Angles and splice bars	103.00 to	104.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	75.00 to	76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 71.00
No. 2 hvy. melting	65.00 to	66.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	115.00 to	116.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 53.00 to	$ 54.00
No. 2 hvy. melting	48.00 to	49.00
No. 2 dealer bundles	41.00 to	43.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	77.00 to	79.00
No. 2 bundles	38.00 to	40.00
No. 1 busheling	79.00 to	81.00
Shredder scrap	81.00 to	83.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	22.00 to	24.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	70.00 to	72.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 83.00 to	$ 85.00
No. 2 hvy. melting	73.00 to	75.00
No. 1 dealer bundles	68.00 to	70.00
No. 2 dealer bundles	53.00 to	55.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 74.00 to	$ 76.00
No. 2 hvy. melting	64.00 to	66.00
No. 1 dealer bundles	61.00 to	63.00
No. 2 dealer bundles	44.00 to	46.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	84.00 to	86.00
No. 2 bundles	71.00 to	73.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	43.00
Mixed bor. and turn.	35.00
Cast scrap	60.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	23.00 to	24.00
Crushed turnings	53.00 to	54.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	119.00 to	121.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	105.00 to	106.00

MAR.

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1981

Chilton's

MARCH 2, 1981

IRON AGE

SPECIAL METAL PRODUCING MANAGEMENT EDITION

MASTERING BLAST FURNACE TECHNOLOGY—ONE COMPANY'S APPROACH

FLUI[illegible]OWER GETS SET FOR GROWTH OV[illegible]E LONG HAUL

0

WHAT MANAGERS MUST KNOW ABOUT ENERGY CONTINGENCY PLANNING

FERROUS/NONFERROUS EARNINGS: THE WINNERS AND THE LOSERS

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IRON AGE

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MARCH 2, 1981

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

PROFIT '80: STEEL DOWN, NONFERROUS HURT

By George J. McManus and Robert J. Regan

Steel

In most ways, 1980 was a very bad year for the steel industry.

A market collapse in the second and third quarters dropped shipments to 84 million tons for the year. That was down from 100 million tons in 1979. It was about the same as shipments in 1964.

Lagging demand brought spirited price cutting. The discounting was so widespread it was officially recognized. Temporary allowances had the effect of reducing sheet and bar prices 4.5 pct during the third quarter. Unofficial discounting continued after the allowances were removed in the fourth quarter.

Nevertheless, 1980 did have its good side. It showed that the steel industry could make money in a bad year. Under the most trying conditions, all the major producers operated profitably in 1980.

That had to mean tight control of costs and a lowering of break-even points. It could mean some spectacular profits if the steel market ever recovers.

The improved cost picture showed up in the fourth quarter when Bethlehem Steel Corp. operated at only 67 pct of capacity and still earned $55.8 million. Although sales were down 4 pct from the 1979 fourth quarter, earnings were up 45 pct.

For all of 1980, Bethlehem's earnings came to less than 2 pct of sales. D. H. Trautlein, chairman of Bethlehem, expects the company to be "at about the break-even point for at least the first quarter." The profit margin is thin, but it is a little surprising that a steel company could have any margin at 67 pct of capacity.

For United States Steel Corp., shipments in 1980 were the lowest since 1961. That was 20 years ago and a depressed steel year. All in all, the $504 million earned by U. S. Steel last year was impressive.

Some of the profit came from nonsteel operations. Real estate and coal transactions contributed to U. S. Steel's earnings. Inventory adjustments reduced costs by $85 million in the fourth quarter and $179.1 million over the full year.

But steel proved it could make money in a bad year. Poor fourth quarter hurt nonferrous.

However, U. S. Steel did have an operating profit on steel. Allowing for the adjustments and the property sales, the 4 pct return on all sales was respectable.

In its earnings statement, U. S. Steel emphasized again a policy of diversification. "Steel sales will continue to grow," said D. M. Roderick, chairman. "Sales of other lines of business will grow at a faster rate."

Under the most trying conditions, all major steel companies operated profitably in '80.

Among the largest mills, the highest profit margins were the 4 pct of U. S. Steel and the 4.7 pct of Armco, Inc. Like U. S. Steel, Armco has steered itself into non-steel fields. Last year provided a test of Armco's diversification strategy, said Harry Holiday, chief executive officer. Earnings rose "in the face of severe recessionary impacts on many of our steel businesses," he added.

Armco did well in 1980, but it got an extra lift from a $17.7 million legal settlement and a $31.5 million stock sale. The most important factor, however, was the energy boom. Armco's sales of oil field equipment accounted for 45 pct of the company's operating profit in 1980.

The energy part of Armco's business will look even better in 1981 because the company is shifting seamless tubular products out of the steel group and into the oil field group.

It was the energy market that kept 1980 from being a complete disaster for the steel industry. Demand for oil country seamless was strong throughout the year. With drilling rigs and various accessories taking added tons, the energy market accounted for more than 20 pct of last year's output.

Among other things, the oil field boom demonstrated that the thing most needed to boost steel capital spending is market growth. When demand for oil country products rose, Armco and CF&I Steel Corp. announced new seamless mills. U. S. Steel began expanding its seamless capacity.

The other saving factor in 1980 was the quick recovery from the summer slump. After dropping to 5.3 million tons in July, steel shipments rose to more than 7.4 million tons in October.

Shipments of 22.5 million tons in the fourth quarter were up from 17.5 million tons in the third quarter. The rise pinpointed break-even levels and showed the striking effect of volume on profits.

Bethlehem went from a loss of $32 million in the third quarter of 1980 to a profit of more than $55 million in the fourth quarter. Republic Steel Corp. went from a loss of $14.5 million to a profit of nearly $40 million. Inland Steel Co. went from a $6 million deficit to a $31 million profit. U. S. Steel's earnings more than doubled from the third to the fourth quarters.

Steel men expect to operate at about the fourth quarter rate through the first half of 1981. This puts them a little over the break-even point and just below the steep part of the profit curve. The industry seems poised for a profit explosion with a return to normal volume.

If the 1980 slump served to squeeze the fat out of steel costs, it also squeezed the excess inventory out of users' stocks. Seven million or eight million tons of steel inventory were liquidated in 1980. The low levels of inventory are now making for firm demand. Lagging auto sales are reducing mill orders somewhat, but there is not the compounding effect of inventory cutting.

Reduced inventories also mean there is the potential for a sudden upsurge in demand. The slightest upward bump in steel consumption will

(Cont. on p. 41)

Earnings for Steel, Nonferrous, in 1980

Steel Profits '80: They Might Have Been Worse

*Final quarter figures only
Parenthesis indicates loss

In Millions of Dollars		Earnings				Sales	
	1980 E/S	1980	1979	Pct Change	1980	1979	Pct Change
U. S. Steel	4.0	504.50	(293.00)		12,492.10	12,929.10	−3.4
Bethlehem	1.8	121.00	275.70	−56	6,743.00	7,137.20	−5.5
Armco	4.7	265.27	248.67	+6.7	5,678.00	5,035.13	+13
National	2.1	83.76	126.47	−34	3,913.50	4,306.22	−9.1
Republic	1.4	50.98	121.16	−58	3,760.04	3,987.38	−5.7
Inland	0.9	29.68	131.11	−77	3,255.90	3,635.23	−10
LTV	1.6	127.90	173.50	−26	8,010.00	7,996.80	+0.1
Total	2.7	1,183.09	783.61	+51	43,852.54	45,027.06	−2.6
Wheel. Pgh.	1.4	14.70	49.70	−70	1,054.05	1,242.30	−15
Interlake	1.3	13.82	39.74	−65	1,055.88	1,104.59	−4.4
Cyclops	2.1	20.41	5.26	+288	978.98	915.36	+7.0
Kaiser	20.7	191.47	46.77	+309	927.01	968.64	−4.3
McLouth	—	(56.57)	9.37	—	614.01	725.09	−15.3
CF&I	3.1	19.01	15.37	+24	614.00	557.23	+10
Copperweld	4.1	18.98	23.08	−18	460.70	493.36	−6.6
Lukens	1.3	4.71	7.47	−37	375.88	342.31	+9.8
Carpenter*	7.4	10.16	9.43	+7.7	136.60	131.48	+3.9
Phoenix	0.7	1.27	3.77	−66.3	175.64	161.32	+8.9
Florida*	6.3	4.94	3.88	+27	78.51	64.85	+21
Laclede	—	(788.00)	(55.00)	—	230.58	234.55	−1.7
Eastmet*	1.2	.85	2.74	−69	73.49	62.18	−18.2

Parenthesis indicates loss
*1st half of fiscal year

Nonferrous Profits: Fourth Quarter was the Worst

Parenthesis denotes loss.

Millions of Dollars	4th Q '80	4th Q '79	12 months '80	12 months '79
Alcan	$125.0	$117.0	$542.0	$406.0
Alcoa	102.9	135.1	469.9	504.6
Amax	88.7	103.0	470.4	365.3
Asarco	24.7	83.0	237.3	259.1
Falconbridge	——	——	109.1	130.6
Freeport	38.6	26.0	147.4	101.4
Hecla	9.0	17.0	55.0	35.2
Inco	36.9	69.2	219.4	141.7
Kaiser	43.0	63.8	247.6	232.2
Kennecott	160.8	52.5	192.4	130.4
Newmont	36.3	63.9	199.0	178.8
Olin	(27.5)	15.5	33.9	71.2
Phelps Dodge	28.9	37.6	91.3	110.8
Revere	6.3	5.3	21.7	25.7
Reynolds	33.5	44.4	180.3	177.1
St. Joe	30.5	8.6	117.1	77.6
Texasgulf	80.9	44.2	325.6	136.9

Asarco: Net for 1980 includes nonrecurring gain of $20.9 million from change in accounting policy.
Falconbridge: Canadian funds.
Hecla: Net for 1980 includes special gain of $4.0 million from adjustment of company's share of estimated reserve for termination costs of the Lakeshore mine. Tax loss carryforwards were $2.5 million and $4.1 million for fourth quarters of 1980 and 1979; $19.3 million and $11 million for 1980 and 1979 respectively.
Kennecott: Net for fourth quarter and full year 1980 includes non-recurring gain of $99.5 million on sale of 50 pct interest in North Carolina Phosphate Corp.
Olin: Net for fourth quarter and full year 1980 includes $40 million write-off for restructuring of Winchester operations.
Phelps Dodge: Fourth quarter 1980 includes after-tax gain of $18.4 million from sale of 40 pct interest in Conalco.
Reynolds: Fourth quarter 1980 net includes special charge of $8.6 million for closing of several facilities. Net for 1980 includes foreign currency translation and exchange gains of $11.1 million; net for 1979 includes $14.8 million foreign currency exchange and translation losses.
St. Joe: Fourth quarter and full year 1979 net includes $47.5 million writeoff of zinc smelter.

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(Cont. from p. 35)

be magnified by inventory building.

Steel men are hopeful the tax policies of the new Reagan Administration will produce more than a slight bump. "President Reagan has acknowledged the need to improve the health of industrial America," said Mr. Roderick of U. S. Steel. "I am confident and optimistic that these plans will go forward in a positive manner."

Proposed depreciation changes would not have much immediate effect on steel companies:

The companies have too little taxable income to benefit from added credits, but faster capital recovery could provide a big boost to steel markets.

In one of life's recurring ironies, the Reagan Administration's hands-off policies on prices come into play when steel prices are subject to intense competitive pressures. Published steel prices will go up in 1981, but unless demand improves, discounting will continue.

Steel imports remain a worry to domestic producers. The 15.5 million tons imported last year was down from 17.5 million tons in 1979. The decline was somewhat less than that of domestic steel, and imports captured a slightly higher share of the market.

By past standards, however, the foreign response to the market decline was reasonably prompt.

There were grounds for concern in the rise of imports to more than 1.5 million tons in December. The increase came more than a month after the new trigger price system was installed. It did not suggest the system is having a restraining effect on imports.

Nonferrous

For key **nonferrous metals producers** the recession took its toll of profits during the fourth quarter of 1980. Demand for aluminum was down, particularly in the export market.

The copper producers emerged from a costly and protracted strike into a slack market. A weak domestic automotive industry and a slack housing market cut into consumption of both metals, and lead and zinc besides.

Meanwhile, labor costs continued to increase along the first leg of the three-year wage pacts negotiated during 1980.

And the cost of energy continued its upward march.

The three leading U.S. aluminum producers, Alcoa, Reynolds and Kaiser Aluminum, reported sharp drops in fourth quarter profits despite higher sales. Canada's Alcan Aluminium Ltd. showed a 6.8 pct increase in fourth quarter net, but this was marked against a final 1979 period that was adversely affected by a strike at the company's Quebec smelters.

Aluminum prices continued to increase during 1980, with the last increase on the base ingot price going through as the fourth quarter got under way.

Domestic demand was nothing to write home about, but a busy export market kept things humming throughout most of the year.

Alcoa's fourth quarter shipments fell to 450,000 tons from 467,000 tons in the same 1979 period, but the company apparently was braced for a drop even larger than the 3.6 pct drop reported.

Weak auto market and housing slump in '80 hurt major nonferrous metals producers.

W. H. Krome George, chairman and chief executive officer, said 1980 was a good year overall for Alcoa "in many markets, especially aerospace and primary ingot." Alcoa's earnings for all of 1980 were pulled lower by losses sustained by its Alcoa of Great Britain unit.

Kaiser Aluminum chairman Cornell C. Maier credited the company's 6.7 pct gain in 1980 net to increased exports and better results by the company's Australian and European affiliates.

Looking at 1981 prospects, Mr. Maier said "the declining growth rate in foreign economies which was evident at the close of 1980 has continued into the new year." As for the domestic market, he said there is "general expectation that the economic recovery will not resume until the latter half of the year."

Primary aluminum production was at record levels in the U.S. and abroad again in 1980. Producers' inventories began climbing toward the latter part of the year and free market prices consequently swung well below U.S. producers' published prices after having been much higher earlier in the year.

Copper prices dipped smartly in the latter part of 1980 as U.S. producers ended the strikes that began at midyear.

A high rate of imports canceled out the loss of domestic production and the recession, combined with the high cost of maintaining inventories, held copper demand to a minimum as production slowly moved upward.

Kennecott's copper production dropped 13 pct last year to 337,364 tons because of the 10-week strike at its western facilities. Sales were down 18 pct to 332,838 tons. Average realized prices were up 13 pct for the year despite the fourth quarter drop, but this didn't help operating profits. Net income for the fourth quarter and full year were higher because of a nonrecurring gain or $99.5 million gain on the sale of a 50 pct interest in North Carolina Phosphate Corp. to Agrico Chemicals Co., Kennecott's partner in the venture.

The copper strike pulled Phelps Dodge's production down nearly 22 pct to 367,800 tons last year. Sales fell 12.7 pct to 272,900 tons. The company's fourth quarter and full year profits were helped by an $18.4 million after-tax gain on the sale of a 40 pct interest in Consolidated Aluminum Corp. Phelps Dodge's share of the aluminum unit's profits rose to $7.8 million last year from $3 million in 1979.

Asarco's copper operations were hit by a nearly four-month strike at its U.S. facilities and a strike during the fourth quarter at Southern Peru Copper Corp. Higher silver prices helped take some of the sting out of the copper losses.

Amax had record net income in 1980 despite a 14 pct drop in fourth quarter net.

The decline in the final period reflected lower sales of molybdenum and nickel as well as easier markets for copper, lead and zinc.

Inco Ltd.'s nickel shipments fell 12 pct to 80 million lbs in the fourth quarter and shipments for the year were off 12.4 pct to 345 million lbs. Nickel production last year jumped to 394 million lbs from 255 million lbs in strike-affected 1979 with the result that Inco's nickel inventory rose by 74 pct last year to 155 million lbs.

Eroding nickel prices cut into fourth quarter net and the company established a 6 pct temporary discount last November that carried into the new year. □

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IS INDUSTRY READY FOR THE NEXT FUEL CRUNCH?

Contingency planning helps energy intensive industries cope with the problems resulting from a fuel shortage.

By Robert E. Harvey

Energy first became a major management concern when gas shortages suddenly surfaced in 1973. Natural gas supplies dried up for a brief period four years later and, in recent years, regional spot shortages, especially in natural gas, have forced the closing or relocation of a number of firms.

However, despite the threat of interrupted fuel supplies from national mismanagement or international crises (the continuing war between Iran and Iraq, for example) most energy managers see contingency planning as a rather low priority item at this time. Many are concentrating instead on using the available fuels efficiently.

"Possibly no fuel problem will arise in the next three to five years," says Blaine N. Ouimette, electrical engineer with Black & Veatch, Kansas City. "However, who can predict what may happen in the straits of Hormuz? This doesn't mean that everything is so unpredictable that all you can do is throw your hands up. The first premise is that the problem is manageable."

Even when they believe the problem can be managed, many firms still do little because of what they believe to be the high cost of hardware, auxiliary energy systems and standby fuel supplies. However, contingency plans can be adopted that need little hardware.

"When we decided to develop a contingency plan, there were some money requirements, but these requirements were mainly requirements of time, not equipment," said Jerry Wood, corporate energy manager, Dayco Corp.

Besides thinking contingency planning is too costly, managers often sees little use in preparing for shortages which may be several years away. However, warns Arnold F. Klick, executive vice president, American Society for Energy Management, "energy contingency planning should not be avoided for fear of its difficulty or because times are good. Contingency plans are a lot like insurance: You hope you never need it, but are very glad to have it when the need arises."

Like preparing for famine in a time of plenty, there are a number of reasons why energy contingency planning should start now. For one thing, waiting too long may mean that needed backup equipment and supplies are no longer available.

Industrial Energy Consumption: History and Projections for Three Base Scenarios, 1965-1995

(Quadrillion Btu)	History			Projections								
	1966	1973	1978	1985			1990			1995		
Fuel				Low	Mid	High	Low	Mid	High	Low	Mid	High
Electricity	1.50	2.30	2.70	3.60	3.60	3.60	4.50	4.60	4.60	5.30	5.50	5.60
Distillate[a]	0.70	0.90	1.20	0.30	0.30	0.30	0.40	0.40	0.40	0.50	0.40	0.40
Residual[a]	1.20	1.30	1.50	0.20	0.10	0.10	0.20	0.10	0.10	0.50	0.20	0.10
Liquid Gas	0.30	0.60	0.80	0.70	0.70	0.60	0.80	0.70	0.60	0.90	0.80	0.60
Coal	5.40	4.40	3.40	6.50	6.50	6.50	7.10	7.30	7.20	7.70	7.90	7.40
Natural Gas[a]	6.80	9.60	7.90	7.60	7.20	7.10	8.70	7.80	7.50	9.30	8.10	8.00
Other[b]	2.50	3.80	4.50	5.20	5.10	5.10	6.20	6.00	5.90	7.10	6.70	6.50
Total Consumption	18.30	22.90	22.00	24.00	23.60	23.30	28.00	26.80	26.30	31.30	29.50	28.70

[a] Includes refinery consumption, excluding raw materials.

[b] Includes feedstocks, raw materials, and refinery consumption of still gas and oil.

Note: The analysis of industrial energy consumption treated the following four components separately: process heaters and small boilers, major boilers, refineries and raw materials.

Source: Dept. of Energy

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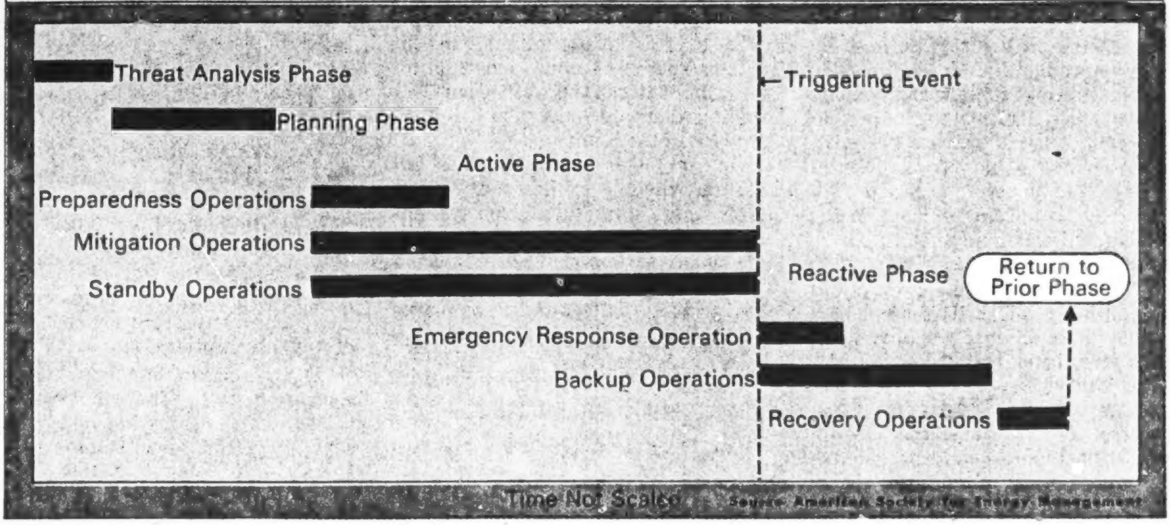
Energy Contingency Planning and Execution



Time Not Scaled Source: American Society for Energy Management

Planning for energy shortages is much like taking out an insurance policy: When the unexpected happens, it is nice to be able to fall back on a carefully developed contingency program.

The first step, of course, is to recognize that unexpected energy shortages can occur. The second is to develop a plan of action. And third, act on that plan.

Several effective contingency programs have been developed by educators, engineering consultants and professional societies. One plan (see diagram), developed by the American Society of Energy Management (ASEM) breaks contingency problems into two phases: actions to be taken before shortages occur and reactions after the energy crunch.

Prior to shortages, according to the ASEM, a company should prepare a threat/risk analysis. Simply put, threat/risk analysis assesses risks to a corporation by identifying possible threats (such as oil shortages), determining the likelihood of these threats and estimating the losses that would occur. With concrete figures, a corporate manager can assign priorities to particular energy contingency plans.

After the threat/risk analysis phase comes the planning phase where strategies and objectives are clearly formulated. In the third phase, plans are put into action in anticipation of an energy supply interruption: People are trained, old equipment is modified, and new machinery and backup equipment is installed. All the activities that can dissipate or mitigate the impact are completed.

The final phase of the program involves outlining procedures to follow once the fuel shortage occurs. These include: initiating emergency conservation measures, shutting down non-essential and secondary operations, and reducing or curtailing primary production in a "reverse-priority-ordered sequence."

Back up operations are also initiated and continue until recovery operations move the company out of its emergency situation.

"You have to consider that if you have a problem in a given area, your competitors are probably going to have the same problem. If there is a type of alternate fuel that you need or some alternate process equipment, unless you are looking ahead, you will be competing, probably unsuccessfully, with others to get it," said Mr. Ouimette.

In the same vein, Mr. Klick reports: "Many actions, which must be taken to mitigate the adverse effects of energy contingencies, require preparation time before they can be implemented. In addition, trying to formulate policies in an emergency is not conductive to formulating a well-conceived reponse."

Again, it is not that fuel supplies today are not adequate, it is just that they are subject to unexpected interruption. And when fuel supplies stop, it is a major catastrophe, not a minor irritation. Everything stops and the money lost in that brief shutdown could wipe out savings from years of energy conservation practices.

According to experts, fuel supplies should be adequate for the next three to five years. However, despite governmental efforts to make the U.S. self-sufficient in fuel supplies, the country will actually become more dependent on foreign sources. According to Frederick L. Corban, corporate energy coordinator, Inland Steel Co., U.S. dependence on imported natural gas will jump from 5 pct to 20 pct in 1990. "And although there appears to be reasonable prospect for oil well into the twenty-first century, (there will be) more reliance on imports," he adds.

Electricity will soon be a concern, not because of foreign entanglements but because of inadequate U.S. power plant construction. Some forecasters predict shortages will be small, but others are not as optimistic. One of the more pessimistic is Bechtel Power Corp. which last year predicted that by the year 2000, the U.S. would need 25 to 30 pct more capacity than would be available.

Seeing the dangers of uncertain fuel supplies ahead and the advantages of planning during good times, a manufacturer still must devise a contingency program that will fit his company and his needs. His plans can be grandiose or modest, but he must initiate something, not just talk about it. If he is in an energy intensive company, he may be able to talk his firm into investing a lot of money.

"Our plan simply presents a way for you to look ahead and identify where a problem might develop," explains Mr. Ouimette, a consulting engineer with Black & Veatch. "It doesn't tell you how to solve that problem, it just attempts to buy you enough time, to alert you to the problem and to get you thinking about what you are going to do.

First step in the program is to determine product line departments by merely "listing the various departments that contribute to the product line and constructing an organizational chart to that effect." Not all these steps, however, are critical to the production of the product. So step two is to eliminate any not absolutely essential to the product.

"The key to this step," says Mr. Ouimette, "is to identify those departments whose absence would result in an unconditional shutdown of the product line."

When the critical departments are selected, the types of energy used in each department should be listed as well as back-up fuel sources. In addition, a comprehensive list should be compiled detailing materials in the department's manufacturing operations, the vendors for each material, the estimated annual volume of each material and the substitutes available.

To pare the list to a more manageable level, again, only those materials absolutely critical to the operation should be included.

"The final result of this step is a list of critical materials that are used in critical departments. In a recent study performed for a private manufacturer, an initial materials list of over 700 elements was reduced to a critical list of 30 materials," says Mr. Ouimette.

The next step is to prepare a simple flow chart summarizing the flow of energy through the product line and depicting what forms of energy are used by each department. An accompanying flow chart, although a little more difficult to formulate, should diagram the essential fuels of the vendors that supply those critical materials needed for manufacturing processes.

Now, having identified the areas from where critical materials emanate and where manufacturing facilities are located, it is necessary to predict which areas are most likely to experience energy-related problems. In other words, using all the sources of information available, project the regional availability of energy supplies.

Two more steps remain: Compiling departmental profiles, that is, taking the information that has been compiled about the possibilities for material and fuel shortages and fitting those facts into a profile for each department; and, lastly, making recommendations on the findings to best protect a manufacturing facility from disruptions caused by fuel shortages.

Recommendations might run the gamut from stockpiling some fuel, to initiating alternate fuel capacity, to finding alternate vendors in different sections of the country.

One problem most companies encounter when developing contingency programs is that they often concentrate on the manufacturing aspect and ignore the big picture.

"Getting employees to work is a key problem for a number of plants when gasoline shortages occur," explains John C. Jenkins, director, Energy Management Diploma Program, University of Wisconsin—Extension. However, how many plants have any kind of emergency busing procedures or van pools?

Energy contingency programs work best when tied closely to energy conservation measures.

"A company could start keeping an up-to-date record of where people are commuting from," says Mr. Jenkins. "The first step in a van or car pooling program is matching up people who live in similar locations."

Discovering all the ways that energy shortages affect not just a production line but an entire plant operation is important. Dealing with contingency plans and thinking in terms of possible shortages (being pessimistic rather than optimistic) can be difficult at first for a manager who has been brought up in the demand oriented strategies of the 1960s and 1970s.

Often, before a manager really begins to think the new way, he has been burned a bit by an energy or energy-related shortage.

"At a previous job, I thought I had everything covered in case energy supplies dropped," says Mr. Wood of Dayco Corp. "We used a non-photochemically reactive solvent which we were buying from New Jersey. During the cold winter of 1976, the governor of that state ordered a shutdown of what he considered to be nonessential energy usage. Our supply was terminated and I decided that we had to have some way of dealing with this type of problem.

"What we do at Dayco," Mr. Wood adds, "is have our plant managers assume that they will have 5, 10, 15, and 25 pct cutbacks in essential fuel supplies. These managers are then asked: what would be your actions under these conditions?

"The idea is to maintain the highest profit possible under these adverse conditions."

By following through on these scenarios, Dayco's plant managers were forced to see what was essential and non-essential in the operation. The facilities had already conducted energy audits as a step to setting up energy conservation programs. These audits were helped in pinpointing the effects of fuel interruptions.

"The exercise (of having plants consider operating at low energy levels) raised some interesting questions," says Mr. Wood. "For example, managers had to consider: If they had to eliminate a product line, which one would it be. My experience has been that having each profit center develop an emergency contingency plan is just good business practice."

Mr. Wood also says that if a firm cuts back 5 pct of its energy consumption and finds out that it has not affected production, the situation could be made permanent. It is a good tool for paring energy costs.

Energy contingency programs work best when they are tied closely to energy conservation measures.

"At Carborundum we developed a comprehensive program which consisted of four major elments," says Richard G. Brandenburg, former vice president, manufacturing and engineering, the Carborundum Co. and now dean of the College of Business Administration and dean of the Graduate School of Business and Public Management, University of Denver. "The first element is energy engineering and conservation: Making the best use of the energy that you have."

The second element is an energy measurement system. This system must keep close watch on what kinds and how much energy was being used in each manufacturing location.

The third element, according to Mr. Brandenburg, was the recognition that the procurement or purchasing of energy was becoming a highly significant factor in business operations. The final portion of the plan was continually reviewing energy contracts. ☐

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FLUID POWER GETS SET FOR GROWTH OVER THE LONG HAUL

Look for the industry to push toward a gain of 15 pct a year this decade.

By Keith W. Bennett

It's a good bet that fluid power forecasts for 1981 are going to prove to be too low. At this point, industry sources talk about $6.1 billion sales for the 1200 plants and 795 companies and 300,000-plus workers that make fluid power valves and cylinders and systems.

Their product goes into anything from flu hypodermics, to the biggest land vehicles ever built. It's even in the movies. The shark in "Jaws" was packed full of fluid power devices. Everybody uses fluid power, often without even knowing it.

Last year, the industry posted $5.8 billion for the second year. In an industry that gained an average 15 pct per year for a decade. The industry began the 1970's with $1.8 billion sales. It more than tripled that number in the decade.

But despite the size and variety of its markets (fluid power sells 70 world markets) the growth curve can be erratic. In 1980, the industry opened strongly. But in second quarter, new order books went into a plunge that didn't end till September or October.

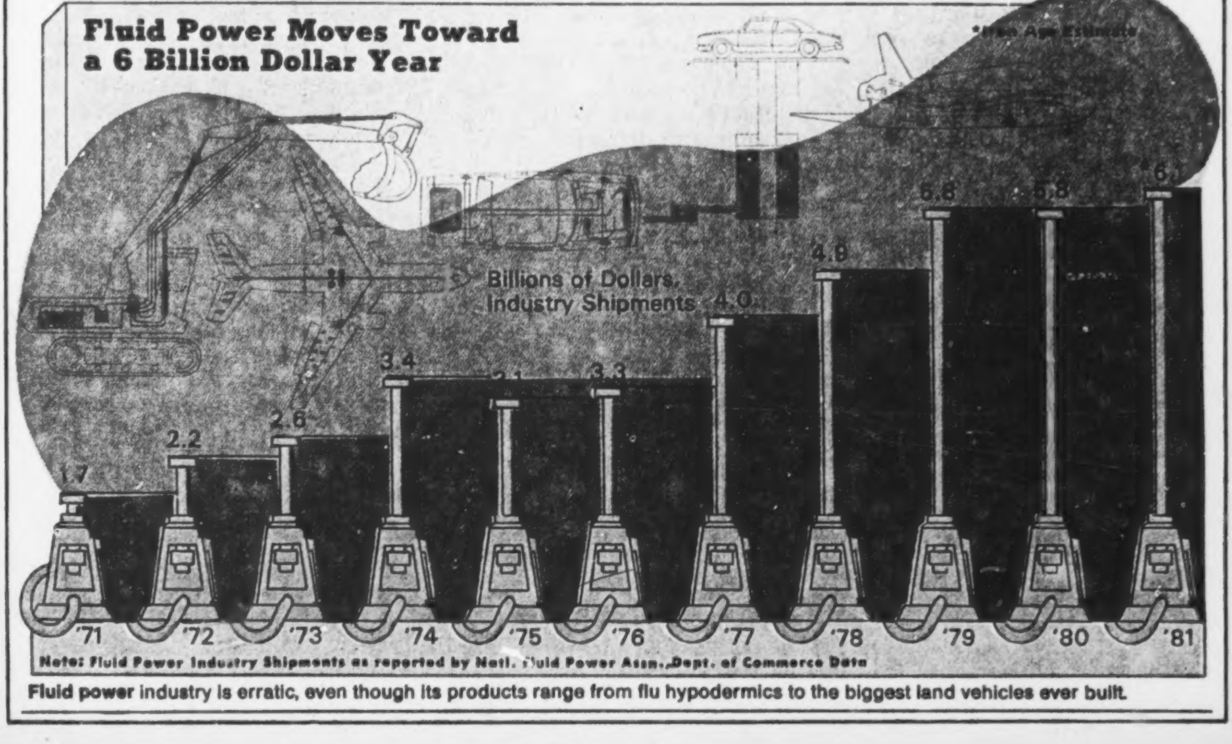
A decade ago, the industry was starting out the same way. In fact, its business volume fell about 1 pct. The following year, however, fluid power companies came roaring back with a 29 pct sales gain. In fact, in the past 10 years, the yearly sales gain exceeded that 15 pct "average" annual gain in about half the years.

This trend indicates that fluid power can turn quickly. When it does, it turns hard. That's always been a point of some concern. The industry needs forgings and castings, and special quality bar in huge quantities. All three of these commodities tighten fast in a rising market.

If you simply project what happened in the 1970's and now in the 1980's fluid power would double to $12 billion-plus by 1985. By the end of this decade, it should be past the $25 billion mark.

Michael Greenfield, director of market research for the National Fluid Power Association, Milwaukee, agreed that the gain in fluid power sales in December was unexpected. Mr. Greenfield still expected a slow first quarter. High interest rates have damped new business. A number of officers of fluid power companies share Mr. Greenfield's opinion.

But he also adds, "Our companies (NFPA now has nearly 200 member companies) seem to feel pretty good,


Fluid Power Moves Toward a 6 Billion Dollar Year

Note: Fluid Power Industry Shipments as reported by Natl. Fluid Power Assn., Dept. of Commerce Data

Fluid power industry is erratic, even though its products range from flu hypodermics to the biggest land vehicles ever built.

though. It may be the high interest rate is less relevant than it used to be. People seem to be finding ways to borrow cash at something under the prime rate." So, here again, is a hint that things may get warm after the flat first half.

The brunt of the 1980 recession centered on the Midwest. The classic automotive industries—cars and trucks and construction machinery and farm equipment—were in the heart of it.

By contrast, a number of fluid power producers in coastal areas and the industrial South, scored new records during 1980. Though they share the general caution about first half 1981, they are already admitting that second half and certainly fourth quarter, could see a fairly sharp fluid power surge in their areas as happened in 1972 and 1976.

"We saw a slowdown in new orders by September of last year," recalls James Stellar vice president of the Industrial division, Hayden, Inc. Corona, Calif. Hayden, despite its location, relates to the automotive industries through its cooling equipment for hydrostatic drives, among other products. Even with this automotive bent, Hayden enjoyed three record quarters in 1980, which gave it a new sales peak in last year's recession. An order pickup in January, says Mr. Stellar, seems to have leveled in February. Nonetheless, it is expecting a strong fluid power market to develop in 1981. It will at least equal the 1980 sales total this year. Interestingly, this company has its heaviest volume in the second calendar half of a year.

Hayden, Inc., is also an exporter, and Mr. Hayden believes the export market could begin to pick up this year, also.

Similarly, at Florham Park, N.J., vice president H. H. Kaemmer of the Valve department of Automatic Switch Co., says, "We see a long runway leading through 1981 with some potholes in it, before we take off again." But he's also watching a possible sharp turn at the end of this year. "Customers' inventories are at a minimum," he notes.

The biggest of U.S. industrial valve producers for pneumatic applications, Automatic Switch ranges over a wide market that includes machine tools, processing machinery, robots and even farm machines. It acquired a screw machine facility, and an investment casting plant in recent years and last year began a refurbishing of both of these. That brought Hayden to a record capital outlay last year, and 1981 will see only a slight decline in capital spending.

The Sunbelt and the Coasts were solid in 1980, as a general rule. But the recession shadow spread across a belt from Western Pennsylvania across to Minnesota and down to Missouri. If 1981 turns out in the final furlongs to be a dark horse winner, then it has to begin happening in that belt.

But even in the recession area, some companies did pretty well last year. Fulflo Specialties Co., Blanchester, Ohio, came into fluid power in 1921 as a pump maker. Now, it makes hydraulic pressure release valves at its single plant for both domestic and export markets.

Miller Fluid Power expects growth in the capital goods markets.

"As we see it, 1981 should be a good year in our industry. We didn't see a dropoff in 1980, in fact. Perhaps because of our market emphasis in machine tool and energy. In fact," according to president Dorothy Clifton, "last year was our biggest year." Ms. Clifton is also a national director of the NFPA.

She says Fulflo has grown with the average 15 pct reported for the fluid power industry, and will do that again in this decade she believes. To meet that, however, Fulflo must begin looking at capacity expansion. The last full-scale increase at the company is now five years old. Besides general market gains, Fulflo has been developing new products to meet the growing high-pressure hydraulics market, which would also call for more machinery capacity.

Capital goods are entering 1981 with a still strong backlog. So maybe it shouldn't be a surprise that a company serving that market is already speaking well of 1981.

But how about the recreational equipment market. It has been off in recent years. Oildyne, Inc., Minneapolis, has a single plant producing smaller hydraulic power units (under five gals. capacity), as well as components.

"We're heavy in outboard motors," reports executive vice president Charles Nelson. "That area fell in 1980, even though our other markets held. In fact, hydraulic parts for aircraft landing gears, and the biomedical markets did very well in 1980. Even printing presses, which use hydraulics, were good. Even so, we had a decline in 1980."

"But 1981? Well, that's opening strong," Mr. Nelson said. "In fact, we have a fiscal year that ends March 31, and we expect to go up by 50 pct."

Oildyne is receiving part of that strength from new customers. But it also includes some new business from the outboard motor industry which is looking at some very large motors. Oildyne also expects more gains in its biomedical accounts, as well as some new defense work."

"This just didn't happen, of course," Mr. Nelson said. "It's the payoff on about three years of development work." To ready for this, the company will probably commit $200,000 to $300,000 for machine tools. It had cut back machine tool purchases in 1980 while it endured the order decline.

It's also interesting that Oildyne is getting its gains from domestic markets, since export isn't a big factor in its total sales.

Oilgear company, Milwaukee, is now over $35 million in sales and enjoyed gains in both sales and earnings in 1980—another company that seems to have beaten the slump. Partly because the company was early into the energy markets. Its main manufacturing base is the big plant at Milwaukee, but president Carl Gosswehr notes that two smaller plants were both expanded, and then consolidated into a single larger plant in Texas.

Energy and machine tools are both important markets for Oilgear, notes Mr. Gosswehr. "Our business relating to oil drilling rigs is booked solid for all of this year, and it begins to look as if the activity in the energy field could go on for another decade," he believes.

Even with that prospect, Oilgear could spot an order softening in No-

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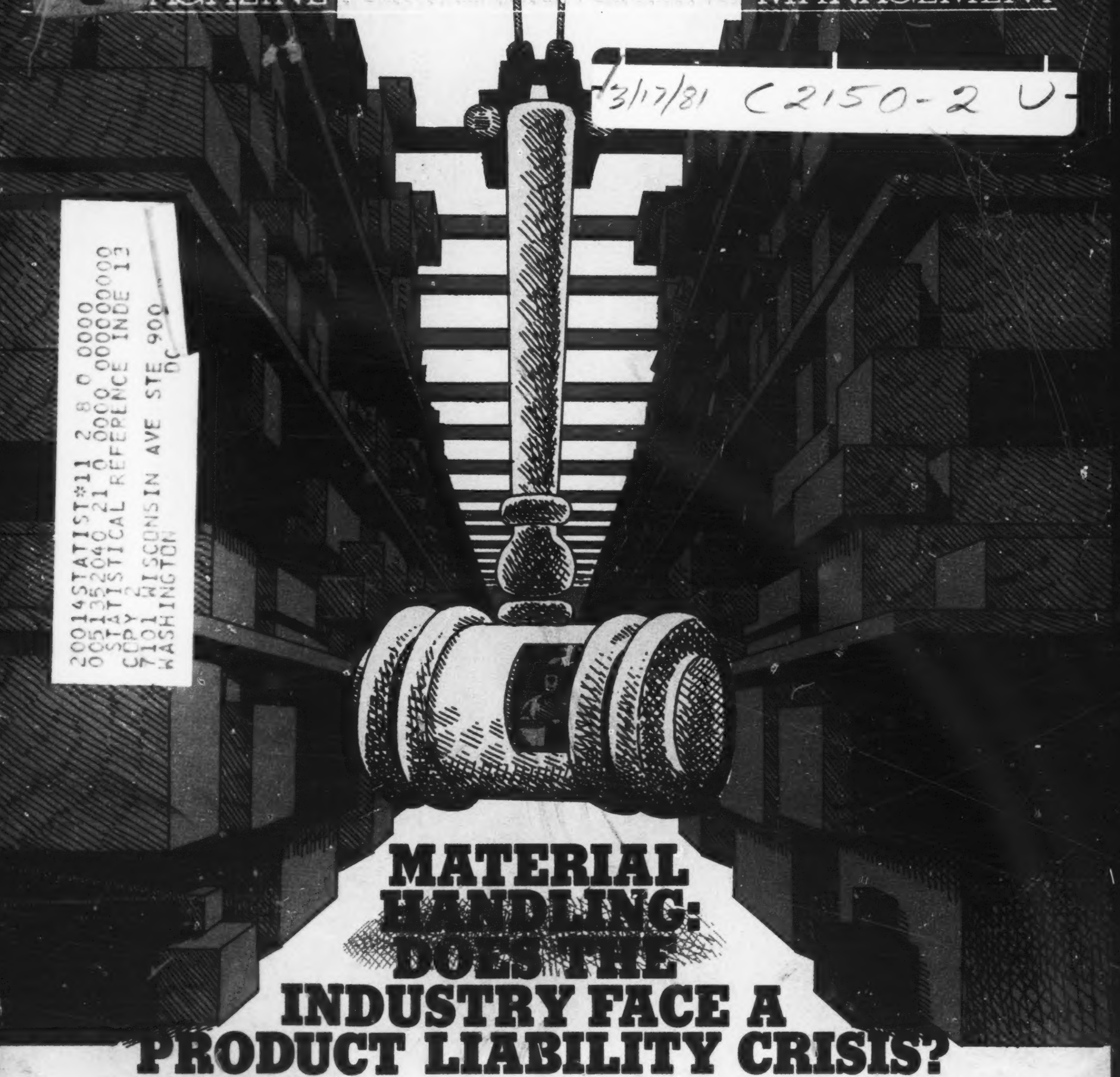


MATERIAL HANDLING: DOES THE INDUSTRY FACE A PRODUCT LIABILITY CRISIS?

THE SPACE SHUTTLE ROCKETS METALWORKING INTO THE FUTURE

THE CASE FOR PRIVACY IN THE WORKPLACE

vember of 1980. Since, some of the lighter equipment seems to have begun a recovery. "There's been a general feeling 1981 could be a little tight, but after that we see a very strong outlook," he concludes.

Export is 20 pct of Oilgear sales, and it's been expanding its product lines for that market, which could take '81 exports up.

Oilgear also builds big systems, which have been moving well in the energy markets. But besides its fluid power systems, it seems to be expanding its state-of-the-art in mating fluid power with microprocessors, which would argue for further market expansion.

One of the biggest of the fluid power builders is the Sperry Vickers division of Sperry Corp., headquartered at Troy, Mich. It's also a world marketer, with about half its sales outside the U.S.

A big spender for new capital equipment over the past three years for markets it expected to develop in the '80s. Sperry Vickers is still putting $30 million a year into new equipment, says president T. N. Duncan.

It's notable that some of Sperry Vickers important markets are automotive, including construction machinery, that were hardest hit by the 1980 recession.

"The credit crunch hit truck and bus, agricultural equipment construction machinery in the spring of 1980," said Mr. Duncan. "Some buying fell off 30 pct. Machine tools held, but plastic forming machinery fell off somewhat."

Sperry Vickers' five-year plan according to Mr. Duncan indicates a "15 pct per year growth through the 1980s, with no real downturn in 1981. We see, in fact, a sizeable upturn toward the end of this year. Our present manufacturing capacity can meet the demand of the 1981 and 1982 markets. But new product lines will begin to increase our needs. Particularly in exicting area like control systems. Controls seem to offer an area of important growth, both in the U.S. and foreign markets."

Sperry Vickers also has an aerospace-marine-defense operation, which company officers seem to feel has a strong prospect, stop an already good backlog. So when Sperry Vickers talks about a strong turn at the end of this year, it includes action in markets that are still developing, but also includes gains in some markets that were depressed last year.

Parker Hannifin Corp., based at Cleveland, is another of the fluid power industry's giants and one involved in 140 different markets. Still growing both here and abroad, last year it acquired a European fitting producer from Gould, Inc. And like Sperry Vickers, it had a strong 1980 capital input, amounting to $50 million; beyond the cost of the acquisition.

Even though it was affected by the weakened construction equipment market and a slow auto after-market, "1980 was better than I'd expected, though it wasn't a good growth year," said vice president T. J. McCuistion of Parker Hannifin.

After completion of a strong capital program, Miller Fluid Power plans to capitalize on a strong market expected in late '81 and '82.

"But (fiscal) 1981 will see gains, and 1982 will be an excellent year," this executive believes.

Buoying the prospect as it did at Sperry Vickers, is a strong aerospace market. It amounts to 20 pct of Parker Hannifin volume and this strong market is expected to get stronger. The company also has interests in petrochemical and machine tool markets for fluid power, both still running strong, said Mr. McCuistion. The auto aftermarket didn't hold up well in 1980, but after two poor years is beginning to show some renewed health.

Mr. McCuistion still shares the caution of his peers in the industry, in pointing to some weak months still ahead in the first half of 1981. Then, the domestic upturn should begin. Part of his caution may stem from Parker Hannifin's export volume, amounting by one count to $200 million per year. He seems to share a commonly heard opinion in the industry that the European market tends to lag the U.S. market, a as we rise, it should soften, during 1981.

But in second half, agrees Mr. McCuistion, the domestic market will begin to rise and will move strongly.

At Schrader Bellows div., Scovill Mfg. Co., Akron, Ohio a builder of pneumatic equipment, Clifford Brake, division vice president points but that, Schrader Bellows has half its sales in world markets. To meet that expanding market, Schrader Bellows had its biggest capital input year in 1980, even though part of the program was actually to trim back some product lines, while introducing some new models.

"We'll continue to invest, though at a slightly lower rate this year," noted Mr. Brake. "We haven't ordered all of our 1981 tool buy yet, but we know it will include machining centers and some more lathes," Mr. Brake reports.

"With growing international markets, we will need more capacity for both domestic and foreign operations," he adds. He feels that U.S. productivity, given added capital input, is going to rise and that U.S. products are already getting more competitive abroad.

"We had an excellent first half last year," Mr. Brake remembers. "But in second half, we fell with the industry. In December there was a recovery, and the 1981 opening has been strong—actually over forecast though still running under the level of the opening months of 1980."

Now setting up a small plant in Germany (it has six U.S. plant sites and nine overseas), Schrader Bellows expects to invest at a rising rate in the '80's to meet its production forecasts for the period.

William Powell Co., Cincinnati, brought on a plant in South Carolina last year. With 1500 employees, Powell is one of the largest makers of industrial valves. It works in bronze, carbon steel, and stainless.

B. T. Jordan, executive vice president for William Powell, confirms the regional aspects of the 1980 recession in its concentration in the Midwest. Of Powell's own output, about 30 pct goes to heavy industrial accounts, 30 pct to the power industry, and 30 pct to petrochemical and refining plants.

Distributor orders began to fall in June, Mr. Jordan agrees. But a turn up began in November. Still careful about the 1981 outlook, Mr. Jordan allows that he's optimistic. By February, a lot of inquiries were coming in. What concerns him now, is that some new domestic orders for pneumatic equipment are being awarded to overseas suppliers. Not because the U.S. price is higher, but because some consumers are beginning to be concerned over future U.S. supplies of equipment.

There may be an answer to that problem, too. Fluid power uses a lot of demand-sensitive products: steel plate, precision steel bar, castings, forgings. All get tight quickly when U.S. industrial demand is strong.

But in 1980, the NFPA scored a major gain. It got a commitment from the U.S. government to assign SIC code numbers to the fluid power industry. Besides the obvious aid in identifying fluid power markets more clearly, SIC recognition should aid the industry if it needs to seek allocations to get plate or rodstock. These were tough items in every past shortage, notes James Morgan, president of the NFPA.

James Morgan and Ralph Humrickhouse, marketing manager for Schrader Bellows, Scovill, Inc., headed a group that eventually had help from 400 NFPA members. The recognition ends a fight that began 27 years ago, when the NFPA was formed in the early 1950's.

As with the castings and forgings they buy, fluid power equipment builders find the gap between overcapacity and under-capacity can be a narrow one and convincing customers they will have adequate future capacity is critical. Fluid Controls, Inc., Mentor, Ohio, last year merged into Sta-Rite Industries, Inc., of Milwaukee. It is a good illustration of the concern by fluid power builders that they can offer new capacity to meet market growth.

D. Wade White, president of Fluid Controls, Inc., and chairman of NFPA in 1980-81 says the company had grown at a 15 to 20 pct per year rate into a $20 million company. But it lacked the corporate functions that a larger company can supply.

Fluid Controls, also, notes Mr. White, had expanded in 1979 and early 1980. When business slowed, in latter 1980, plans for another new plant were shelved. "Sales began to climb again in November. They have been climbing a little in early 1981. With the farm equipment industry rid of its over-inventory, it could be back buying hydrostatic drives in six months," Mr. Wade points out.

Oilgear of Milwaukee is enjoying success because of its energy emphasis.

"So we are beginning to see the possibility of some pressure on capacity as early as mid-1982. By third quarter of this year, we need to decide if it's time to start a new capital input program." Mr. White, incidentally, has been chairman of the NFPA in 1980-1981.

Origa Corp., Elmhurst, Ill., is a Swedish company formed just 10 years ago, that decided to put in its own plant in the North American market just three years ago.

The company manufactures rodless air cylinders. Swedish investment capital chose the Midwest as a prime market. Despite the 1980 recession, the new plant tripled its output last year and seems to be attracting more capital offers. "Bankers love us," says Mr. James Rodgers, president.

Origa is already adding a new line to boost capacity another 25 pct this year for its line of aluminum cylinders aimed primarily at two already strong markets; aerospace and defense. "We're already sitting on a backlog of inquiries before we even start production of our new model lines," says Mr. Rodgers. The company builds cylinders of 80 mm to 25 mm diameter. It will add two machining centers. With 1981 expected to be Origa's biggest year to date, Mr. Rodgers says the company is beginning to look at the possibility of making an acquisition of its own; a small pneumatic equipment manufacturing company would be a first choice.

Another strong performer is Milwaukee Cylinder, part of Versa Technologies, Inc. Though it's based in the area where the 1980 recession hit many companies, Milwaukee Cylinder is already expecting to hike its 1981-82 budget by 20 pct, says executive vice president David McKendrey.

Milwaukee Cylinder has its eye on the surging robot market, and observers like James Morgan of NFPA confirm a wide interest in the robot potential for fluid power.

"We just landed two important new accounts," says Mr. McKendry. "So we're at least in the talking stages of some expansion, maybe by 1982 to 1983." Last year, Milwaukee Cylinder put $300,000 into new tools and will probably spend a larger sum this year. "You have to keep up on productivity with new machines" says Mr. McKendrey. Since Versa Technologies has been turning in equity returns over 25 pct regularly, the system seems to work.

Miller Fluid Power, at Chicago, similarly had completed a strong capital program. "So we're in fine position to capitalize on a strong fluid power market we believe we will see in late 1981 and growing in 1982 and 1983, says Miller Fluid Power president R. L. Robertson. Capital goods markets are good markets for us, and we expect growth in that area," he adds.

As others have reported, Miller, also saw a recovery beginning in the order rate in December, when the NFPA confirmed a 17 pct fluid power order rate rise for the industry.

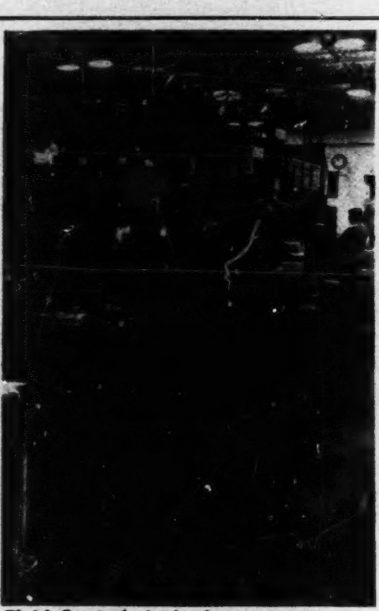
Miller Fluid Power is a strong supplier to the machine tool market. But remember that robot shark in "Jaws"? His innards were largely a Miller Fluid Power system, so it can enter a lot of markets, as can most of the fluid power builders. The company's cylinders go into dam locks, aircraft carriers, the oil industry, to mention a few. In January, Flick-Reedy Corp., parent of Miller, merged into Templeton, Kenly & Co., also with a hydraulic line that enlarges Miller Fluid Power market.

Eaton Corp., Cleveland, has Fluid Power Operations as its window on the fluid power world, under vice president L. G. Feiler, Jr., which did a cracking $100 million-plus in sales last year, apparently.

This was done by a company with a strong position in both construction machinery and farm equipment markets, neither of which were having a big year in 1980. Mr. Feiler has a clue to Eaton's surprisingly strong performance in the "mobile" fluid power market.

"Look at hydrostatic drives for farm machines. Agricultural combines are already 98 pct hydrostatic drive equipped. Yet we're showing a 40 pct growth in hydraulics and hydraulic related controls for this market. In fact, we're already over the levels set in our original strategic plan," Mr. Feiler says.

"Now the grain rotors are going to hydraulic drives, replacing mechanically driven harvesters in this relatively newer market area. The tractor is beginning to go to more use of hydraulics. Here, it's hydro-mechanical uses like power takeoffs to run other farm machines from the tractor."



Fluid Controls looks for pressure on capacity as early as mid-1982.

Still conservative despite a surprisingly good 1980 performance, this company is talking about 10 pct gains in 1981. But, adds Mr. Feiler, "In '82 you'll see the market up substantially more than that, and 1983 should be a barnbuster." This company has four plants, doubled two of them over the past year and some of this new capacity won't be available till this summer.

One thing to watch: Farm equipment and construction equipment both sell to a spring market. The plants have to begin building it in fourth quarter of this year, or they'll miss the market as they did in 1978. In other words, to figure their fourth quarter manufacturing rate, look at their 1982 forecast, not their 1981 forecast. Fourth quarter could see some pretty brisk action, once farm and construction machinery dealers get over their high interest blues and decide to put in some spring inventory.

So if you listen to the fluid power industry in the first half of 1981, you're going to hear a lot of cautious remarks about "Some optimism." The optimism is there, all right. It has to be, in an industry that has more than tripled in size in 10 years, yet is still finding new markets, is bringing on a new rush of products, and finally has some open manufacturing space. □

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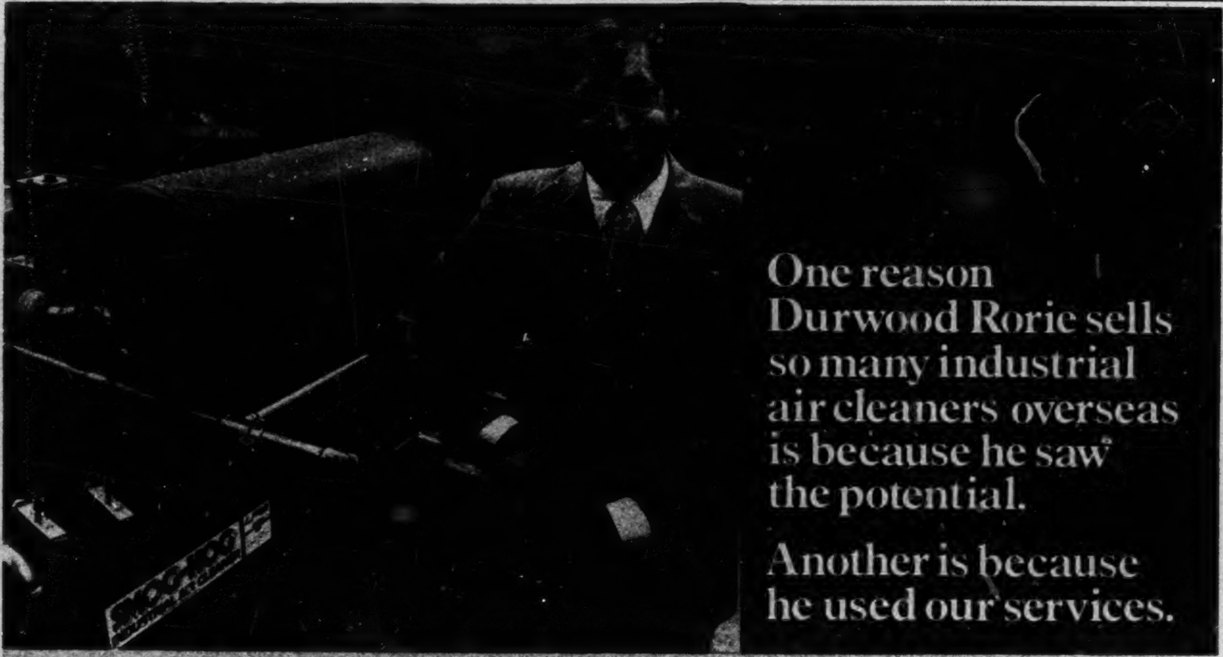

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EFFECTIVE FEB. 17, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	269	256	251	282
Buffalo	47	46	49	63
Pittsburgh	449	433	366	450
Youngstown	125	123	111	139
Cleveland	167	150	142	152
Detroit	166	160	169	166
Chicago	598	623	613	621
Cincinnati	95	101	109	99
St. Louis	83	95	99	60
Southern	252	251	265	265
Western	149	148	153	158
U.S. Production	2,400	2,386	2,327	2,455

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton	80.50*
Old range, non-bessemer	gross-ton	$28.50
Mesabi, regular-unscreened	gross-ton	$28.50
Mesabi, non-bessemer	gross-ton	$28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective February 17, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,400	2,386	15,293	15,421
Capability Utilization Rate	80.2	79.7	79.5	81.2

Composite Prices	This Week	Week Ago	Month -Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/1/81	23.598	23.362	22.901	21.038
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 98.50	$ 98.50	$ 98.83	$105.17
No. 2 bundles	$ 71.83	$ 70.83	$ 72.17	$ 67.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$104.50	$104.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	96.50	108.50
No. 1 steel, Chicago	99.50	99.50	95.50	100.50
No. 1 bundles, Detroit	101.50	96.50	88.50	110.50
Low Phos., Youngstown	104.50	104.50	104.50	109.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	102.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	145.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

* * Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

* * * Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonforrous Prices

(Effective February 17, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	82.05-85.00	82.30-85.00	2/17/81
Lead	30.00	32.00	2/ 2/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	702.00	398.00	7/ 1/80
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$500.75
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$385-$395
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$12.71
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Feb. 9—617.26
Feb. 10—622.33
Feb. 11—618.48
Feb. 12—624.35
Feb. 13—613.30

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68⅛	63
Red brass	73⅜	67⅜
Comm. bronze	75⅝	68⅝
Mang. bronze	67⅛	65⅜
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	64
Light copper	55

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire		71
No. 2 copper wire		60
Light copper		51
No. 1 composition		69
No. 1 comp. turnings		67
Hvy. yellow brass solids		39
Hvy. yellow brass turnings		30
Radiators		51
Aluminum		
New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	41	—42
No. 1 composition	58	—59
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	49	—50
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE FEB. 17, 1981

MATERIALS NEWSFRONT

(Effective February 17, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	94.00 to 95.00
No. 1 dealer bundles	119.00 to 120.00
No. 1 factory bundles (auto)	114.00 to 115.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	119.00 to 120.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	124.00 to 125.00
Heavy turnings	94.00 to 95.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	110.00 to 111.00
RR specialties	118.00 to 119.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$ 99.00 to $100.00
No. 2 hvy. melting	91.00 to 92.00
No. 1 dealer bundles	111.00 to 112.00
No. 1 factory bundles (auto)	114.00 to 115.00
No. 2 dealer bundles	80.00 to 81.00
Unburned bundles	70.00 to 71.00
No. 1 busheling	109.00 to 110.00
Shredder scrap	109.00 to 110.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	69.00 to 70.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	129.00 to 130.00
Low phos. 2 ft. and under	124.00 to 125.00
No.1 RR hvy. melting	103.00 to 104.00
Scrap rails, random lgth.	94.00 to 95.00
Reroller rails	122.00 to 123.00
Rails, 2 ft. and under	129.00 to 130.00
RR couplers and knuckles	122.00 to 123.00
RR car axles	153.00 to 154.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	111.00 to 112.00
Steel car wheels	121.00 to 122.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	106.00 to 109.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	98.00 to 101.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	121.00 to 124.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	90.00 to 93.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 81.00 to $ 82.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	51.00 to 52.00
No. 1 busheling	98.00 to 99.00
Drop forge flashings	95.00 to 96.00
Machine shop turn.	44.00 to 45.00
Mixed borings and turn.	39.00 to 40.00
Shoveling turnings	44.00 to 45.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	68.00 to 69.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	104.00 to 105.00
Electric furnace bundles	104.00 to 105.00
Galvanized bundles	91.00 to 92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	124.00 to 125.00
Low phos. punchings plate	124.00 to 125.00
Drop forge flashings	59.00 to 60.00
Foundry steel, 2 ft. & under	95.00 to 96.00
No. 1 RR hvy. melting	112.00 to 113.00
Rails, 2 ft. and under	130.00 to 131.00
Rails, 18 in. and under	131.00 to 132.00
Steel axle turnings	81.00 to 82.00
Railroad cast	120.00 to 121.00
No. 1 machinery cast	120.00 to 121.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	55.00 to 56.00
No. 1 busheling	74.00 to 75.00
No. 1 dealer bundles	72.00 to 73.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	24.00 to 25.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 91.00 to $ 92.00
No. 2 hvy. melting	79.00 to 80.00
Foundry steel, 2 ft.	79.00 to 80.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	74.00 to 75.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	91.00 to 92.00
Rails, random length	90.00 to 91.00
Rails, 18 in. and under	105.00 to 106.00
RR specialties	93.00 to 94.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	107.00 to 108.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	72.00 to 73.00
No. 1 busheling	91.00 to 92.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	35.00 to 36.00
Shoveling turnings	46.00 to 47.00
Cast iron borings	47.00 to 48.00
Electric furnace bundles	93.00 to 94.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	93.00 to 94.00
Scrap rails, random lgth.	92.00 to 93.00
Rails, 18 in. and under	115.00 to 116.00
Angles and splice bars	104.00 to 105.00
No. 1 cupola cast	101.00 to 102.00
Unstripped motor blocks	74.00 to 75.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	71.00 to 72.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	54.00 to 55.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	95.00 to 96.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 53.00 to $ 54.00
No. 2 hvy. melting	48.00 to 49.00
No. 2 dealer bundles	41.00 to 43.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	68.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to $ 72.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 bundles	38.00 to 40.00
No. 1 busheling	79.00 to 81.00
Shredder scrap	81.00 to 83.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	22.00 to 24.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	70.00 to 72.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 83.00 to $ 85.00
No. 2 hvy. melting	73.00 to 75.00
No. 1 dealer bundles	68.00 to 70.00
No. 2 dealer bundles	53.00 to 55.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 74.00 to $ 76.00
No. 2 hvy. melting	64.00 to 66.00
No. 1 dealer bundles	61.00 to 63.00
No. 2 dealer bundles	44.00 to 46.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	116.00 to 120.00

Seattle

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	84.00 to 86.00
No. 2 bundles	71.00 to 73.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	43.00
Mixed bor. and turn.	35.00
Cast scrap	60.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	94.00 to 95.00
No. 2 bundles	58.00 to 59.00
Machine shop turn.	23.00 to 24.00
Crushed turnings	53.00 to 54.00
Shredder scrap	106.00 to 108.00
Cut structural plate 2 ft. and under	119.00 to 121.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	105.00 to 106.00

STEEL PRICES

Codes identify Producers listed in the Key on page 112. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	22.45

Structurals

Carbon, East	
B3(2)	19.90
U1	19.90
Midwest	
A7, N4	19.90
J3, C20	19.90
W8	19.90
I3, T10, U1	19.90
West	
C6	21.10
U1	20.40
B3	21.10
B3	20.60
South	
A8, C16, U1	19.90
T10	19.90
High-Strength, Low Alloy, East	
B3(2)	19.90
U1	19.90
Midwest	
N4	19.90
W8	19.90
J3	19.90
U1	19.90
I3	19.90
West	
U1, A7	20.40
B3	20.60
B3	21.10
South	
U1, C16	19.90
Wide Flange, Carbon, East	
B3	19.90
U1, A7	19.90
Midwest	
U1	19.90
N4	19.90
I3	19.90
West	
U1	20.40
C6	20.15
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
D1	19.50
S1, J3	19.50
W3	19.50
N4	17.50
W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	19.50
B3	21.75
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	26.10
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	29.75
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	17.35
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	27.55
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.95
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	39.25
R7	32.75
B4	42.60
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	35.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	20.00
K1	18.95
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	24.30
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	23.40
Long-Terne, Midwest	
W5	35.85
A7, U1	25.85
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	18.10
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$23.31
U1	24.94
Midwest	
B3	$23.31
U1	24.94
J3	23.31
M11	24.94
W3	24.94
W5	24.94
West	
K1	$23.81
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	18.25
U1	19.89
W3	19.89
W5	19.89
West	
K1	$18.75
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$20.60
Midwest	
J3	$20.60
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$20.60
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$16.17
Midwest	
M11	$17.30
W5, U1	17.30
J3	15.50
W3	17.30
W5	16.17
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	20.60
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	29.70
C2	23.025
M9, W10, T11, S8	29.50
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5(2), W10, L2, Y1, W8, R3	29.20
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	27.15
B5	29.75
West	
B6	33.40
B6	30.45
R3	30.45-33.40
South	
B5	31.35
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	24.85
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	33.45
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.45
T11, S8	33.20
C10	30.60
Midwest	
B5(2), R3, C10	33.20
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	32.90
B5	33.45
West	
R3	34.55-36.60
B6	33.55
B6	36.60
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	23.25
Midwest	
A7, B3, G3, J3, R3, G2, S1	23.25
I3, U1, W8, I4, W5	23.25
J3	23.25
West	
A7	21.75
U1	23.25
B3	23.25
C6	23.25
O2	23.25
K1	21.75
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	31.05
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	22.20
K2	22.20
South	
U1	25.65
A8	17.60
West	
C6	21.20

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta	22.04	29.81	30.08	32.49	29.97	29.74	22.82	47.38	48.52	55.67	59.67	76.50
Baltimore	28.28	31.27	36.03	39.49	32.91	31.45	25.40	44.80	51.38	55.88	65.73	71.95
Birmingham	24.37	26.27	29.65	31.89	27.64	28.82	22.36	40.52	40.00	54.49	53.70	77.71
Boston	22.08	29.02	31.28	39.06	34.04	31.49	24.05	41.32	55.87	59.17	67.14	71.99
Buffalo	31.78	27.09	36.67	38.19	33.85	32.36	24.18	43.38	54.23	57.52	66.22	71.43
Chicago	21.41	26.83	34.28	31.65	27.08	27.30	19.06	46.58	44.30	51.73	54.80	61.11
Cincinnati	21.50	26.86	31.85	31.32	27.53	27.02	18.52	40.29	44.84	50.35	53.66	69.06
Cleveland	27.89	31.87	36.16	34.35	30.59	29.98	21.28	43.39	50.15	54.38	63.48	68.09
Denver	32.79	31.98	37.50	39.11	32.68	33.14	24.03	45.82	53.27	60.73	68.31	76.41
Detroit	24.48	27.57	32.56	32.11	27.39	29.39	18.58	40.85	44.34	50.41	55.89	62.36
Houston	20.86	24.14	27.88	40.44	30.79	33.18	27.01	46.49	52.69	59.78	67.38	74.39
Kansas City	21.18	25.05	27.88	31.03	29.11	28.70	23.49	58.55	48.06	54.49	61.35	67.85
Los Angeles	28.30	31.28	35.72	42.74	38.31	37.20	34.66	48.29	60.90	68.16	73.66	82.41
Memphis	28.10	28.76	32.23	34.47	29.06	29.98	28.12	44.08	50.50	55.79	63.47	76.93
Milwaukee	20.97	25.65	29.58	30.51	27.45	26.51	18.08	38.91	43.66	49.40	50.45	60.70
New York	20.11	24.02	27.18	42.58	30.29	28.69	23.98	46.20	52.94	58.30	67.49	73.85
Philadelphia	26.38	28.91	57.40	41.15	32.81	32.32	24.82	48.78	54.57	57.19	70.39	74.46
Pittsburgh	30.25	33.76	37.25	38.13	32.78	32.74	30.61	43.19	47.38	54.56	59.46	71.18
Portland	31.80	17.55	38.67	36.85	30.46	34.08	31.86	53.26	59.60	56.88	58.00	....
San Francisco	29.42	33.92	35.10	43.19	35.88	36.63	35.45	47.71	60.85	68.18	73.66	81.97
Seattle	29.38	30.97	34.73	39.68	31.21	32.67	35.97	49.86	60.91	66.18	72.05	80.61
Spokane	21.08	30.56	33.56	38.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis	22.89	25.04	28.22	32.77	26.73	29.91	19.99	40.38	39.89	49.89	55.06	63.37
St. Paul	26.59	23.98	24.79	31.74	29.21	28.10	18.55	40.88	43.03	50.45	57.60	63.90

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2¹⁵⁄₁₆; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

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IRON AGE

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MARCH 11, 1981

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

U.S. MACHINE TOOL BUILDERS OFF-BALANCE OVERSEAS

A formula for dealing with the situation could come in the form of governmental action.

By Edwin W. Bowers

While optimistic about its future, the machine tools industry is at a crossroads in its history. Paths aimed at foreign sales opportunities diverge toward increased success or increasingly narrow opportunities. The time for analysis and questions is over, according to some industry observers. It's time now to lay out a program for moving forward and progressing.

Such a program is under active discussion in Washington where much of what is needed could come in the form of governmental action, according to experts.

By now everyone's heard the litany: Policies of the U.S. government shut off American firms from the widening and increasingly significant Socialist-bloc markets; U.S. exports must be increased and imports must be carefully watched. U.S. companies have lagged behind their Japanese, German and British counterparts in aggressively seeking overseas markets, investing in new technology, adding capacity and developing a skilled labor force.

An impressive study laying out the background of the situation, leveling some charges and, most importantly, offering some concrete proposals is quietly making the rounds in the Nation's Capital.

Following a firsthand survey of the European and domestic machine tools marketing situation, Washington consultant Donald Bedell, whose wife Catherine sits on the International Trade Commission, produced the study.

"There is no time for a continuation of uncertainty, inconsistency, doubts, worries or highly esoteric econometric model analyses or philosophic musing or tinkerings," says Mr. Bedell. "The U.S. government has only to put into operation a series of changes to equalize treatment of U.S. companies with those of our major international trading partners."

A source with the National Machine Tool Builders' Association (NMTBA) would say only that the study is "pretty valid."

Right now, Mr. Bedell said, "the structure of the machine tools industry can only survive if there is industry and government acceptance of a program for export sales and for vastly improved research and development."

"That's a pretty strong statement," says Arthur Thomson, Corporate Director, Manufacturing Engineering, TRW Inc., Cleveland. Mr. Thomson served as chairman of the Machine Tool Task Force (MTTF) study group of machine tools systems management and utilization. "I don't think that's the only way the industry can survive. I think it might better survive that way. If you enable the market forces to flow better, the machine tools industry would be better off domestically. And if you facilitate exports then they will be better off that way too.

Mr. Bedell told *Iron Age* that during recent visits to Germany, France, Switzerland and Belgium he heard "far more distressing complaints about the negative American attitude toward exports than expected."

He lays out a diverse program involving the government, predominantly legislation, to deal with the foreign trade situation. For example, he calls for legislation re-organizing the international trade functions of the U.S.

The President's Export Council under the Carter Administration, recently recommended that all trade functions of many Federal agencies be combined into a single Department of International Trade and Investment if the current government set-up does not seem to be performing satisfactorily.

Other proposals include: Either through administrative action or statute exempt the machine tools industry from restrictions under the Export Control Act or "seek substantial reduction from the critical list of exports." Also called for is passage of legislation creating export trading companies in which firms are allowed to band together for the purpose of selling overseas. Such legislation is currently under consideration at the subcommittee level on Capitol Hill.

Mr. Bedell calls for revisions to the Foreign Corrupt Practices Act to allow U.S. companies to compete more equitably with foreign competitors and Third Country Markets.

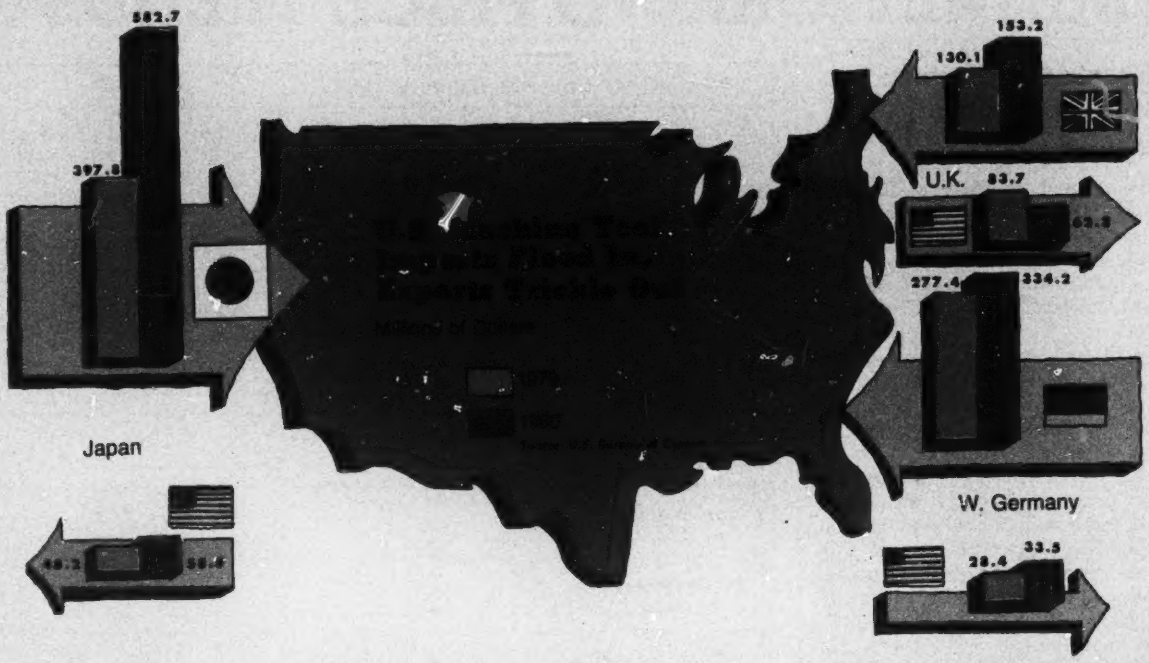
On taxes, the consultant says the Congress should direct the Internal Revenue Service to authorize any company producing machine tools to choose within the range of two to four years the depreciation of capital equipment and allow a company to make one additional change in its rate at the end of five years.

Mr. Bedell urges the domestic industry to support setting up within the Commerce Department a "Product Credit Corporation" designed to prevent foreign states from competing unfairly with U.S. producers.

Looking at the Export-Import Bank, the study calls for no budget limits on the total amount of loan commitments the Bank can make. However, President Reagan in his State of the Union address in mid-February called for reducing the Bank's loan authority by one-third in 1982. "We are doing this," the President said, "because the primary beneficiaries of taxpayer funds in this case are the exporting companies themselves—most of them profitable corporations."

Nevertheless, Mr. Bedell says, such a policy would not stop another of his proposals: legislation allowing greater flexibility of Eximbank to match interest rates with those offered by foreign lending institutions. Currently the Bank is locked into a certain interest rate figure which many overseas institutions can underbid.

Finally, the study calls for setting up an elite task force of machine tools industry specialists within the Commerce Department but including at least two representatives from Eximbank and one from the Overseas Private Investment Corporation. "Purpose of the group would be to vigorously promote U.S. export activities," Mr. Bedell said.



"A useful exercise for the domestic industry," the study says, "would be a study of the overseas investment opportunities available in Less Developed Countries." He calls for industry support of legislation designed to advance the efforts by U.S. companies to invest in LDCs. "This is in effect a counter-strategy, the premise of which is that U.S. overseas investment to supply foreign markets is a viable alternative if a U.S. oriented policy fails."

Looking at foreign takeovers, Mr. Bedell recommends legislation requiring an "economic impact statement" be approved by the Commerce and Justice Departments not later than one year after a formal application has been recorded by a foreign company to acquire a U.S. firm.

"With a continuation of the drift of government policy and of industry policy," the study says, "ownership of U.S. facilities by foreign entities will grow. Many small companies in the U.S. will disappear and others will be absorbed by larger companies specializing in systems development."

"The development of a coherent approach to this industry is not only in the best interests of the industries machine tools serve and the industry itself but is in the national interest as well," Mr. Bedell says. America's machine tools industry supports other industries which contribute about 40 pct to America's GNP.

Says the study: "this country must move out in the development of a truly competitive posture with regard to exports—and promptly."

Looking overseas, the report points out many Americans appear to have difficulty in grasping and adjusting to the difference between the European and U.S. approach to government-industry relationships—"supportive" in the case of Europe and "adversary" in the case of the U.S.

For example, there are no counterparts of U.S. antitrust laws in the EEC, the report says. Also it warns, a new mechanism of government is being established in the form of the EEC with a Commission functioning as a policy co-ordinator, developer in certain areas and enforcer of trade disciplines for the defense of industry and its member states.

Based on personal study of major European marketing practices, Mr. Bedell says "present policies must now be judged on the basis of whether they are consistent with international rules such as the General Agreement on Tariffs and Trade (GATT) and the Organization for Economic Cooperation and Development (OECD) or whether the U.S. can continue to ignore the multiplicity of what are patently unfair trade practices in many cases by the Federal Republic of Germany and other trading blocs."

For example, he says agreement terms of French and German loans to Eastern European countries and the Peoples Republic of China and European Economic Community loans to LOME countries are patently illegal. The LCME countries are 46 African, Caribbean and Pacific countries which were historically a part of the Western European colonial empire. They have had long time economic ties with the EEC. The loans, Mr. Bedell charges, are "solely for facilitating purchase by foreign countries of European goods and services." They violate GATT rules and U.S. statutes, he says.

There have been negotiations under the aegis of the OECD for some agreement on interest charges for export among OECD members. But, Mr. Bedell says, "based on European Economic Community history and predisposition, no agreement worth recording will be agreed to."

The U.S. has deluded itself, he says, that the French and German systems are satisfactory, legal, do no harm or are too difficult to contest. At the same time, the Export-Import Bank has been discouraged from meeting the competition.

The French system, the consultant says, is flexible and capable of almost infinite variations, some of which are clear violations of U.S. law and GATT rules.

The NMTBA said Mr. Bedell is the first person to come forward and charge violations of GATT rules.

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METALWORKING PRICE TRENDS

Who said inflation was easing off? It's up again.

As far as producer prices go, the year started with an inflationary bang.

These prices in January rose by .9 pct, the largest increase since last August. Capital equipment tags rose by an even steeper 1.0 pct, or 12 pct at an annual rate.

But it was mainly energy prices that stole the show in January. In just the month of January, they rose by 2.7 pct. This was about twice the rise in December.

From October through January, the energy price index rose at an annual rate of more than 26 pct. This far outstripped the 4.5 pct annual rate for the six months ended in October. Gasoline and home heating oil prices both increased more than twice as much in December, and natural gas prices rose about as much as in the previous month.

The U.S. Labor Dept., which runs herd on producer price data, warned that more big energy price hikes are in store for February and possibly March. Analysts point out that the January crude oil price increases reflected hikes recently imposed by OPEC. But, January data did not reflect increases resulting from President Reagan's later decontrolling of crude oil and gasoline prices.

Prices for metalworking products ran ahead of the overall producer price hike in January. The average year-to-year price increase for the 23 metalworking product lines shown on the table here was 11.4 pct.

The month-to-month price rise leaders in metalworking in January were industrial process furnaces and ovens and metal containers. These lines rose by 2.7 pct. Pushing them hard were electric motors, ball and roller bearings and light motor trucks, as shown on the table.

Surprisingly, there were product lines in January that had lower tags than in December. Prices of aircraft eased. So did prices for mining machinery. And prices of pumps and compressors showed less of a rise in January than in the previous month.

There was also a small note of hope sounded by the survey committee of the National Assn. of Purchasing Management. In commenting on the sharp price rises in January, it noted that price hikes in the early part of 1980 were sharper.

Latest Month Covered: January, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	333.8	+ 1.0	+14.4
Metal Forming Machine Tools	370.1	+ 1.9	+12.1
Agricultural Machinery & Equip	273.5	+ 1.5	+10.1
Construction Machinery & Equip	304.9	+ 1.3	+10.5
Special Industry Mach. & Equip	295.3	+ 1.4	+13.3
Industrial Process Furnace & Ovens	314.2	+ 2.7	+13.1
Industrial Material Handling Equip	265.4	+ 1.4	+ 9.5
Pumps, Compressors & Allied Equip	307.6	+ 1.0	+13.7
Fluid Power Equip	214.5	+ 1.5	+15.1
Mechanical Power Transmission Equip	283.7	+ 1.5	+13.5
Automobiles	199.4	+ 1.0	+ 8.2
Motor Trucks—Light	239.7	+ 2.0	+12.5
Motor Trucks—Heavy	265.7	+ 1.5	+11.8
Railroad Equipment	327.8	+ 1.3	+10.2
Fabricated Metal Structural Products	283.0	+ 1.4	+ 9.3
Electric Motors	261.9	+ 2.5	+ 6.1
Valves & Fittings	297.7	+ .4	+ 9.2
Ball & Roller Bearings	285.8	+ 2.4	+18.1
Cutting Tools & Accessories	242.8	+ .9	+10.3
Heating Equipment	215.4	+ 1.3	+ 8.0
Plumbing Fixtures & Brass Fittings	255.5	+ .4	+ 9.8
Metal Containers	311.4	+ 2.7	+ 9.9
Miscellaneous Metal Products	261.3	+ 1.1	+ 8.6

Data based on U.S. Labor Dept.'s Producer Price Index

EFFECTIVE FEB. 23, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons
(000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	275	269	251	295
Buffalo	52	47	47	62
Pittsburgh	442	449	392	460
Youngstown	120	125	116	142
Cleveland	167	167	146	146
Detroit	185	166	175	174
Chicago	623	598	607	610
Cincinnati	114	95	111	94
St. Louis	90	83	89	65
Southern	254	252	271	255
Western	152	149	146	166
U.S. Production	2,474	2,400	2,351	2,469

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton	80.50*
Old range, non-bessemer	gross-ton	$28.75
Mesabi, regular-unscreened	gross-ton	$28.50
Mesabi, non-bessemer	gross-ton	$28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective February 23, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,474	2,400	17,767	17,864
Capability Utilization Rate	82.6	80.2	79.9	81.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/1/81)	23.598	23.598	23.362	21.038
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$103.50	$ 98.50	$ 98.83	$105.17
No. 2 bundles	$ 73.50	$ 71.83	$ 71.50	$ 68.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$109.50	$104.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	96.50	108.50
No. 1 steel, Chicago	109.50	99.50	95.50	100.50
No. 1 bundles, Detroit	101.50	101.50	88.50	110.50
Low Phos., Youngstown	104.50	104.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	102.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	132.50	129.50	129.50	145.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective February 23, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	84.30-87.00	83.65-87.00	2/23/81
Lead	30.00-32.00	30.00	2/20/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$25.00
Gold per troy oz.	$511.50
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$390-$400
Molybdenum, lb. Tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$200
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$13.11
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Feb. 16—610.69
Feb. 17—611.47
Feb. 18—614.41
Feb. 19—614.41
Feb. 20—615.09

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80	70¾
Yellow brass	67¾	62⅝
Red brass	73½	67
Comm. bronze	75¼	68¼
Mang. bronze	66⅜	64⅝
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	62
Light copper	53
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	39
Hvy. yellow brass turnings	30
Radiators	51

Aluminum

New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	41	—42
No. 1 composition	58	—59
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	49	—50
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE FEB. 23, 1981

MATERIALS NEWSFRONT

(Effective February 23, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$109.00 to	$110.00
No. 2 hvy. melting	94.00 to	95.00
No. 1 dealer bundles	119.00 to	120.00
No. 1 factory bundles (auto)	114.00 to	115.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	124.00 to	125.00
Machine shop turn.	29.00 to	30.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	58.00 to	59.00
Low phos. punchings plate	124.00 to	125.00
Heavy turnings	94.00 to	95.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	110.00 to	111.00
RR specialties	118.00 to	119.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	725.00 to	735.00
18-8 turnings	625.00 to	635.00

Chicago

No. 1 hvy. melting	$109.00 to	$110.00
No. 2 hvy. melting	99.00 to	100.00
No. 1 dealer bundles	119.00 to	120.00
No. 1 factory bundles (auto)	121.00 to	122.00
No. 2 dealer bundles	85.00 to	86.00
Unburned bundles	75.00 to	76.00
No. 1 busheling	115.00 to	116.00
Shredder scrap	114.00 to	115.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	52.00 to	53.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	126.00 to	127.00
Low. phos. punchings plate ¼ in. and heavier	134.00 to	135.00
Low phos. 2 ft. and under	129.00 to	130.00
No.1 RR hvy. melting	114.00 to	115.00
Scrap rails, random lgth.	104.00 to	105.00
Reroller rails	132.00 to	133.00
Rails, 2 ft. and under	136.00 to	137.00
RR couplers and knuckles	129.00 to	130.00
RR car axles	158.00 to	159.00
No. 1 machinery cast	132.00 to	133.00
Cupola cast	122.00 to	123.00
Stove plate	114.00 to	115.00
Steel car wheels	126.00 to	127.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to	$ 93.00
No. 2 hvy. melting	79.00 to	82.00
No. 1 dealer bundles	106.00 to	109.00
No. 2 dealer bundles	59.00 to	62.00
No. 1 busheling	106.00 to	109.00
Shredder scrap	98.00 to	101.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	121.00 to	124.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	90.00 to	93.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 81.00 to	$ 82.00
No. 2 hvy. melting	78.00 to	79.00
No. 1 dealer bundles	101.00 to	102.00
No. 2 bundles	51.00 to	52.00
No. 1 busheling	99.00 to	100.00
Drop forge flashings	95.00 to	96.00
Machine shop turn.	47.00 to	48.00
Mixed borings and turn.	43.00 to	44.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	700.00 to	710.00
18-8 turnings	570.00 to	580.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	99.00 to	100.00
No. 2 dealer bundles	68.00 to	69.00
Machine shop turnings	18.00 to	19.00
Shoveling turnings	24.00 to	25.00
Low phos. plate	104.00 to	105.00
Electric furnace bundles	104.00 to	105.00
Galvanized bundles	91.00 to	92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	87.00 to	88.00
No. 1 factory bundles	108.00 to	109.00
No. 2 bundles	40.00 to	41.00
No. 1 busheling	88.00 to	89.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	17.00 to	18.00
Shoveling turnings	24.00 to	25.00
Cast iron borings	18.00 to	19.00
Cut structural & plates, 2 ft. and under	124.00 to	125.00
Low phos. punchings plate	124.00 to	125.00
Drop forge flashings	59.00 to	60.00
Foundry steel, 2 ft. & under	95.00 to	96.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	81.00 to	82.00
Railroad cast	120.00 to	121.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	15.00 to	16.00
Mixed bor. and turn.	24.00 to	25.00
Shoveling turnings	26.00 to	27.00
Cast iron borings	24.00 to	25.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	116.00 to	117.00
No. 1 cupola cast	84.00 to	85.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	80.00
Foundry steel, 2 ft.	79.00 to	80.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	74.00 to	75.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	90.00 to	91.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	93.00 to	94.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	107.00 to	108.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 91.00 to	$ 93.00
No. 2 heavy melting	83.00 to	84.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	91.00 to	92.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	35.00 to	36.00
Shoveling turnings	46.00 to	47.00
Cast iron borings	47.00 to	48.00
Electric furnace bundles	93.00 to	94.00
Elec. furnace, 3 ft. & under	83.00 to	84.00
Structural and plate, 2 ft.	111.00 to	112.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	93.00 to	94.00
Scrap rails, random lgth.	92.00 to	93.00
Rails, 18 in. and under	115.00 to	116.00
Angles and splice bars	104.00 to	105.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	74.00 to	75.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to	$ 78.00
No. 2 hvy. melting	71.00 to	72.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	54.00 to	55.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	115.00 to	116.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	39.00 to	40.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to	$ 53.00
No. 2 hvy. melting	47.00 to	48.00
No. 2 dealer bundles	42.00 to	44.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	77.00 to	79.00
No. 2 bundles	36.00 to	38.00
No. 1 busheling	79.00 to	81.00
Shredder scrap	81.00 to	83.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	22.00 to	24.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	70.00 to	72.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 83.00 to	$ 85.00
No. 2 hvy. melting	73.00 to	75.00
No. 1 dealer bundles	68.00 to	70.00
No. 2 dealer bundles	53.00 to	55.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 74.00 to	$ 76.00
No. 2 hvy. melting	64.00 to	66.00
No. 1 dealer bundles	61.00 to	63.00
No. 2 dealer bundles	44.00 to	46.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	84.00 to	86.00
No. 2 bundles	71.00 to	73.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	83.00
Bush. new fact. unprep'd.	67.00
Machine shop turn.	35.00
Short steel turn.	43.00
Mixed bor. and turn.	35.00
Cast scrap	60.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	58.00 to	59.00
Machine shop turn.	23.00 to	24.00
Crushed turnings	53.00 to	54.00
Shredder scrap	106.00 to	108.00
Cut structural plate 2 ft. and under	119.00 to	121.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	105.00 to	106.00

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1981

WELDING EQUIPMENT, SUPPLIES & ROBOTICS:
A SPECIAL ADVERTISING SECTION

Chilton's
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MARCH 23, 1981

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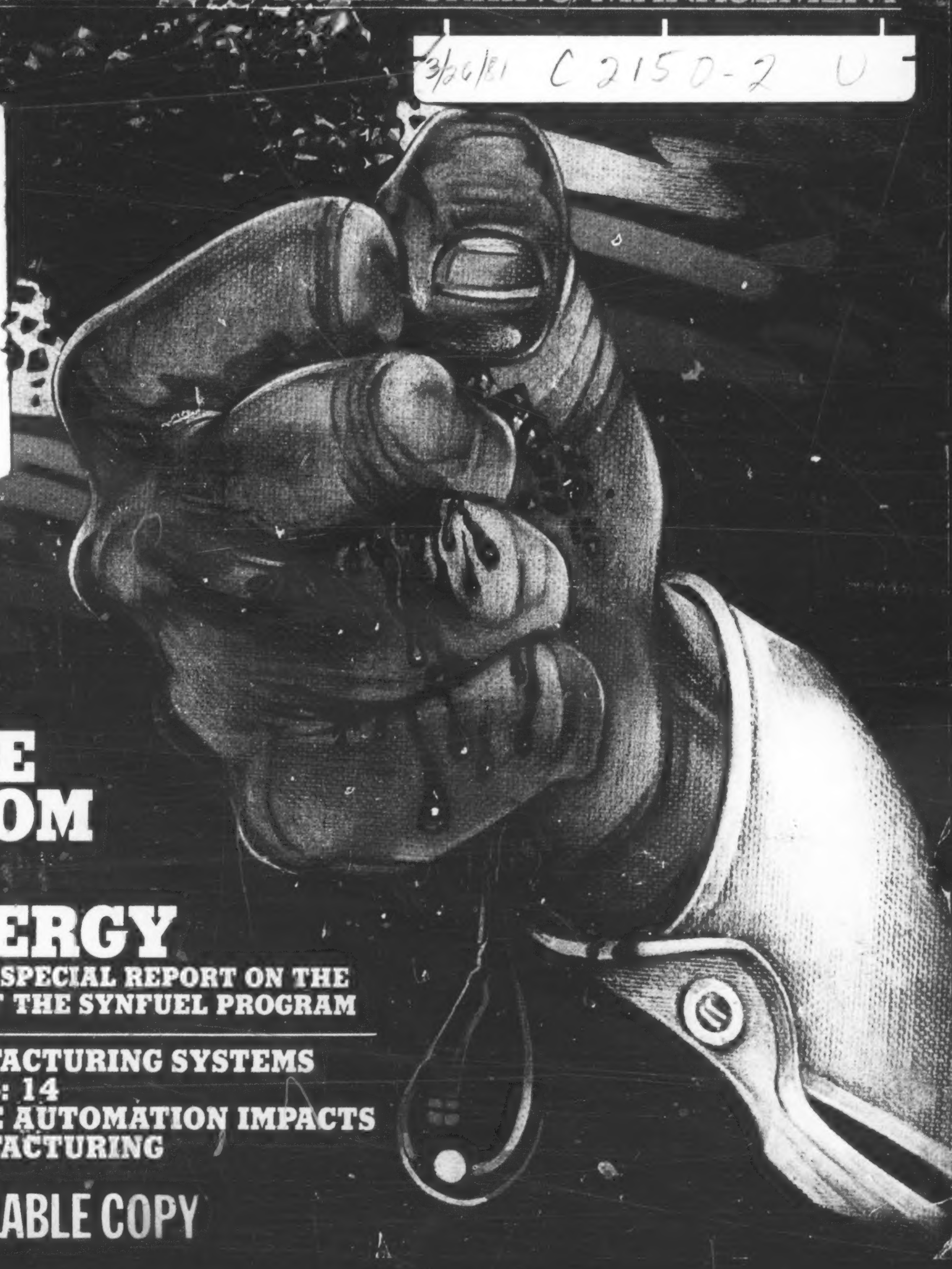

THE BOOM IN ENERGY

WITH A SPECIAL REPORT ON THE FATE OF THE SYNFUEL PROGRAM

MANUFACTURING SYSTEMS SERIES: 14
OFFICE AUTOMATION IMPACTS MANUFACTURING

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IRON AGE

VOL. 224, NO. 9

MARCH 23, 1981

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back in metalworking

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. Controlled circulation postage paid at Philadelphia, PA 19104 and Salisbury, MD 21801. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19080

THE BOOM IN ENERGY— THE OIL INDUSTRY SUPPLIERS TAKE OFF

As huge sums of money are poured into energy development, spending is fanning out across the economy.

By George J. McManus and Susan T. Parker

The push to expand the nation's fuel supply is now reaching the action stage.

After years of talk, studies and warnings, two things are happening. First, massive sums are going into the development of energy sources. Secondly, this spending is fanning out across the economy.

The action is concentrated in the oil industry. Spending by the 25 largest oil companies is expected to hit $60 billion in 1981. That will be double the 1979 total.

The immediate effect of this spending is a record rate of oil well drilling. Less obvious is the extent to which oil money is starting to spill over into coal. Most of the big oil companies are now big coal companies.

Also important are the ripple effects of energy spending. "We had an extremely strong fourth quarter," said F. W. Jones, executive vice-president for the machine tool group of Giddings & Lewis, Inc.

"We ran counter to the trend," Mr. Jones adds. The industry trend for machine tool orders was down in the fourth quarter. Giddings & Lewis enjoyed an upturn because of good business in the energy market.

There will be more buying in 1981. Hughes Tool Co., which is a leading supplier of drilling components, is boosting its capital spending 60 pct—from $178 million in 1980 to $285 million in 1981.

Joy Manufacturing Co., which builds coal mining machinery and petroleum equipment, added nearly $34 million to its capital budget in the last quarter. Joy's new orders in the quarter were up 30 pct from a year earlier.

No one has a good handle on the energy market, but it is clearly not confined to the actual drilling and mining equipment. Other kinds of machines are needed to make this equipment.

Energy:
A
Special
Report

"We're putting money into machining, fabrication and assembly," said C. R. Heinz, vice-president for Joy's coal machinery group. A big part of the company's capital spending is for new warehouses in Pennsylvania, Virginia and Colorado.

For Hughes Tool, the making of rock bits, joints and related items affects two kinds of suppliers: forge shops and machine tool builders.

"Generally, we start with forgings," says Ike Kerridge, economist for Hughes. Manufacture involves "metal cutting of high nickel alloys."

The requirements of companies like Hughes are showing up in the orders of Pittsburgh Forging Co. "We have noted an increase coming from the energy market," said A. F. Sarosdy, president of Pittsburgh Forgings.

The main source of this increase is the oil exploration boom. A record 62,000 wells were drilled in 1980. No slowdown is indicated for 1981.

"I don't think there's any doubt it's going to be another record year," says Mr. Kerridge of Hughes Tool.

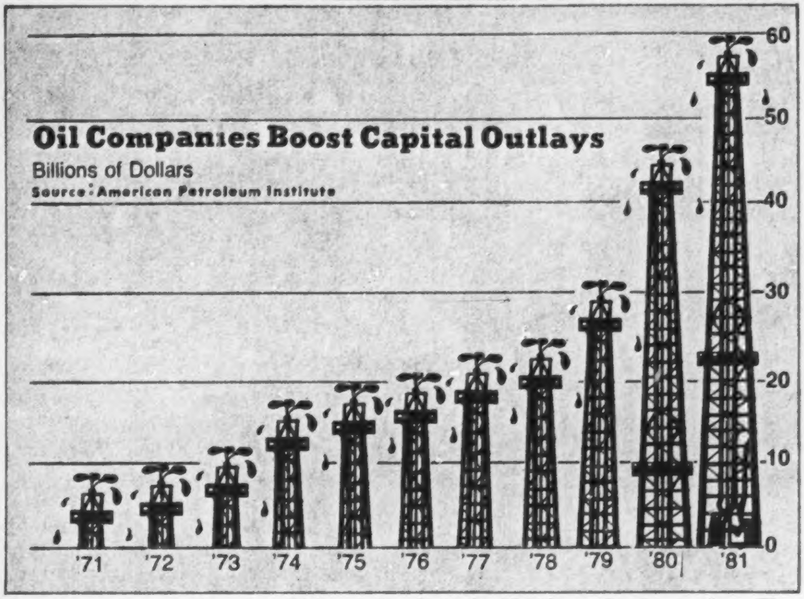
The oil companies are spending money because they're making money. The $5.6 billion earned by Exxon last year was up from $4.3 billion in 1979. Mobil Corp. reported an earnings increase from $2.0 billion in 1979 to $2.8 billion in 1980. Standard Oil of Ohio, Getty Oil Co., and Gulf Oil Corp. all had good profit gains. With full decontrol of oil prices, there should be further gains in 1981.

The effects of higher earnings is apparent from looking at past patterns. When oil profits lagged in 1975, spending lagged. After profits rose by $10 billion in 1979, capital spending rose by $17 billion in 1980.

In short, the solution to the energy problem is to make it profitable for people to develop new fuel sources. Apart from the big companies, dentists, chiropractors and others are putting money into drilling partnerships and syndicates.

The chain reaction started by this spending showed up when Armco Inc. authorized a $400 million seamless mill. The oil boom has produced a strong demand for oil country seamless. It also has produced profits. Armco's oil field equipment division accounted for 45 pct of the company's operating profit in 1980.

A second seamless mill has been announced CF & I Steel Corp. United States Steel Corp. is expanding seam-



Oil Companies Boost Capital Outlays
Billions of Dollars
Source: American Petroleum Institute

less capacity at Lorain, Ohio and Gary, Ind. U. S. Steel is considering a complete new seamless mill for Fairfield, Ala.

Not exactly booming now but showing signs of life is the steel linepipe market. "From a general point of view and from our point of view, it is looking very good," said E. W. Spitzig, manager of tubular products for Bethlehem Steel Corp. "Things are beginning to break loose now."

Bethlehem got the biggest chunk—139,000 tons—of the linepipe going into the Northern Border project. The 577,000-ton total for Northern Border covers the first of 200 miles of a 900-mile system.

The magnitude of this project is evident when you consider that the domestic steel industry shipped only 500,000 tons of linepipe in all of 1980. Until recently, most of the pipe was going into small maintenance and replacement projects.

Domestic volume has been further depressed by heavy imports—409,000 tons of linepipe in 1979. Foreign producers continue to be very active in the market. Italian and Japanese linepipe producers, along with Kaiser Steel Corp. and U. S. Steel Corp., are participating in the Northern Border project.

While Bethlehem is more optimistic about the linepipe outlook, the company does not feel called upon to expand. Recent shipments of 500,000 tons a year compare with a long term average of 1.6 million tons annually.

The size limitations of domestic mills kept them out of some pipeline projects, but Bethlehem does not see a broad requirement for pipe 48 inches and bigger. It takes an enormous field to justify the extra large sizes.

"No one expects to find another East Texas," said Robert Wendt, assistant general manager of market research for Bethlehem.

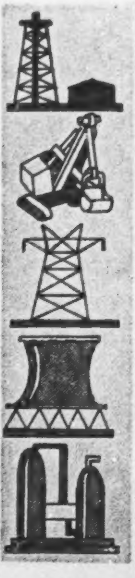
It is expected that new transmission lines will call for pipe 20 inches or larger in diameter. A big transmission line is big business for the linepipe mills.

"It's very steel intensive," said Mr. Wendt.

Of the $1.6 billion being spent on the Northern Border line, about a third will go to steel. The dollars aren't exactly gushing into pipe mills but the tempo is quickening. "There is a very positive mood in the market place," said Mr. Spitzig.

With regard to oil country seam-

Fixed Capital Requirements for the Energy Industries



Billions of Current Dollars

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1980-90
Oil and Gas													
Exploration and Development	28.6	33.5	38.8	46.4	54.0	62.7	71.8	80.6	89.7	99.8	111.0	123.4	811.7
Refining	2.7	3.9	5.0	6.2	6.2	6.2	6.2	6.2	6.7	7.2	8.4	9.7	71.9
Marketing	1.0	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.0	13.9
Transportation[2]	1.9	2.2	2.7	3.3	3.1	3.0	3.5	3.6	3.7	3.9	4.0	4.2	37.2
Total	34.2[1]	40.9	47.9	57.3	64.7	73.2	82.8	91.7	101.3	112.1	124.5	138.3	934.7
Alternative Fuels[3]	0.3[5]	0.5	1.0	1.5	2.3	3.8	5.5	7.5	10.0	12.9	18.9	26.9	90.8
Coal, Mining	2.1[4]	2.1	2.0	2.4	2.7	3.3	4.1	4.5	5.1	5.9	6.7	7.7	46.5
Transportation	1.4[5]	1.5	1.7	1.8	2.0	2.2	2.5	2.9	3.4	3.8	4.4	5.2	31.4
Total	3.5	3.6	3.7	4.2	4.7	5.5	6.6	7.4	8.5	9.7	11.1	12.9	77.9
Electric Utility													
Generation	24.9	24.8	26.7	28.7	30.1	32.2	37.4	43.3	48.5	54.3	60.8	67.5	454.3
Transmission, Distribution & Related Facilities	10.4	10.5	11.3	12.2	12.8	13.7	15.8	18.4	20.6	23.0	25.8	28.6	192.7
Total	35.3[6]	35.3	38.0	40.9	42.9	45.9	53.2	61.7	69.1	77.3	86.6	96.1	647.0
Nuclear Fuel Cycle	1.9[5]	2.4	3.0	3.9	4.7	5.4	6.1	7.1	8.4	9.4	10.7	12.2	73.3
Gas Utility	4.2[7]	5.2	7.8	9.5	11.4	18.1	16.1	8.0	8.6	9.3	10.1	10.9	115.0
Total Energy Industries	79.4	87.9	101.4	117.3	130.7	151.9	170.3	183.4	205.9	230.7	261.9	297.3	1938.7

[1] Oil & Gas Journal, February 18, 1980. Exploration and development data have been modified slightly to include gas utility expenditures as estimated in Gas Facts, 1978, American Gas Association. [2] The transportation section includes expenditures for crude and product pipelines, deepwater ports and tankers. [3] Primarily synthetic fuel expenditures, with relatively minor outlays for solar energy. [4] McGraw Hill capital spending survey. [5] Bankers Trust Company estimate. [6] Electrical World, March 15, 1980. [7] Estimated by American Gas Association, Gas Facts, 1978.

Source: Bankers Trust Company estimate

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less, Bethlehem is not in a hurry to provide new capacity. The company feels it's in good shape now. It also feels there could be some water in the demand picture. Shipments of oil country goods rose 50 pct last year on a much smaller increase in consumption. There have been inventory gluts in the recent past, and another could be coming, says Mr. Wendt.

"You do see a rather volatile picture."

While expressing a few reservations, Mr. Wendt agreed that the energy market has become a big market for steel. It's estimated the energy field took 20 pct of the steel produced last year. That compared with less than 15 pct for the depressed auto industry.

The oil industry has plenty of refining capacity, but there is a need for capacity to process the heavier crude grades. De-metalizing and desulphurizing systems are being ordered.

"The expenditures in these areas are massive," said J. A. Snyder, sales vice-president for the chemical group of Dravo Corp. "A single refinery may spend $300 million or more. One company is spending in excess of a billion."

Dravo is building a crude oil treatment facility in Saudi Arabia. In the U.S., the company has operating and maintenance responsibilities for the Strategic Petroleum Reserve Storage Program at six sites on the Gulf Coast.

Nooter Corp., which does plate fabrication, reports some demand for refinery modifications but not much else in the energy field. "That's really the only work that is going on right now," said Eugene Smith, sales manager for Nooter. "Things are still pretty slow for us."

Nuclear energy work is "non-existent," said Mr. Smith. The synthetic fuel program doesn't have serious impact yet.

The refinery market should be a big outlet for the steel plates made by Lukens Steel Co. "There is more activity there," said R. L. Cahoon, vice-president, commercial, for Lukens. "You're getting some very big vessels.

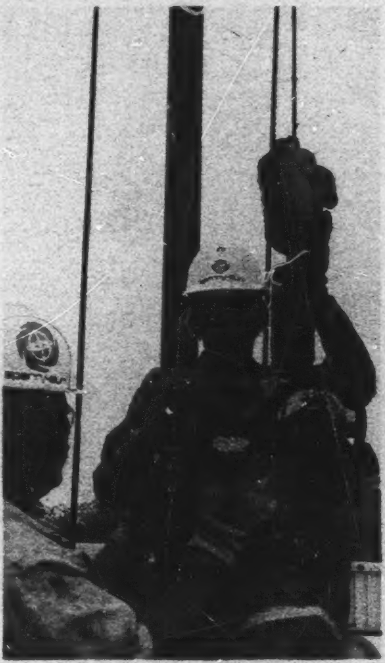
"The big problem," continued Mr. Cahoon, "is that a significant portion has been going to offshore fabrication, particularly Japanese."

He cites a recent Amoco order for nine large vessels to be fabricated in Japan. Domestic fabricators are hungry for business, but they can't meet foreign prices.

"We're trying to get away from dependence on foreign oil," said Mr. Cahoon. "We're transferring that to dependence on foreign equipment."

He notes that a similar pattern of foreign supply is showing up in the early synthetic fuel projects. This could be important in the future, but at the moment there isn't that much business involved.

With excess capacity in 1980 and slack demand indicated for 1981, coal companies aren't rushing out to expand. "Business in the coal industry has been soft," said Michael Walsh, vice-president, Mine Safety Appliance Co.



Big petroleum companies are rapidly establishing positions in coal.

Mine Safety supplies respirators, lamps, methane detectors and other items associated with underground mining. Mr. Walsh says future business will be affected by what happens in labor negotiation with United Mineworkers of America.

"The operators are saying they have to have increased productivity."

There is uncertainty and there is continued market slack, but there are also signs that a massive surge in coal activity is coming. U.S. exports of coal rose 42 pct last year. Rising oil prices are making the economic advantage of coal more and more compelling. In Connecticut, alone, environmental codes force electric utilities to burn oil at a cost that is $500 million more than the cost of coal.

"And the half billion dollars in higher fuel costs does not include the industrial and commercial energy users who are also burning oil," said R. K. Patton, vice-president of eastern sales for Consolidation Coal Co.

Coal producers are hopeful the Reagan Administration will eliminate the "regulatory excess" which is now restricting coal use. It is inconceivable that the nation will continue much longer to ban an abundant fuel in the middle of an energy crisis. Bankers Trust Co. predicts that the energy derived from coal will rise from 17.7 quadrillion BTU in 1979 to 23 quadrillion BTU in 1985 and to 28.4 quadrillion BTU in 1990.

Capital spending by coal companies is seen rising from $1.7 billion BTU in 1981 to $2.1 billion in 1985 to $3.2 billion in 1990. Meanwhile, the consumption of oil will level off and then decline. Bankers Trust projects a 12 pct reduction in the use of oil by 1990.

Among those keenly aware of the trend toward coal and away from oil are the big petroleum companies. They have rapidly been establishing positions in coal. In one recent move, Gulf Oil Corp. joined with Republic Steel Corp. in a venture to develop Republic's North River coal properties in Alabama.

"The prospects for increased coal consumption to meet future energy needs at home and abroad make the North River property particularly valuable," said Jerry McAfee, chairman of Gulf.

Last year, Standard Oil of Ohio agreed to pay $700 million for coal reserves of U. S. Steel. Consolidation Coal is owned by Conoco, Inc. Exxon and Philips Petroleum have coal properties that exceed the total oil reserve of the U.S.

All of which brings the enormous resources of the petroleum industry to bear on coal. The oil companies have money to invest and they are used to investing on a long term basis.

"They're not buying equipment for 1981," said Joy's Mr. Heinz. "They're buying equipment for the decade of the Eighties."

This thinking has not produced a general boom, but in Joy's case, it has generated more business than might have been expected in a time of light demand for coal.

"We've been surprised at the amount of spending there is," said Mr. Heinz.

Dravo Corp., which has a broad involvement with coal, notices a changing pattern in the market. "We find

More Capacity for Tubular Products Comes On Stream

The domestic steel industry is trying to take an active role in the production of oil country tubular goods. In recent months, several steel companies have announced plans to either build new seamless mills or add production capacity to existing mills, but these won't be on stream until 1983 at the earliest. The Houston oilfield executive thinks it might be too late by then, because the "oil firms have learned that Japanese tubes are damned good."

Conversely, Wall Street steel analysts don't think the steel industry was blind to what was going on in the tubular market. They concede, however, that the industry may have been caught off-guard by the magnitude of the market, but then again, so was nearly everyone else.

Joe Wyman of Shearson, Loeb & Rhoades, New York, is one of the analysts who believe the industry wasn't wearing blinders. The reason: he attended a meeting two years ago during which Armco Inc. executives forecasted the growth in the tubular market.

But, he says, that even though Armco and other steel firms saw the tubular boom coming, their hands were virtually tied because of the lack of capital in the industry. Also, he explained, the steel firms "couldn't quite time this thing," because of the volatile Mideast situation which hastened U.S. drilling activity.

Richard L. Head, president of Armco Inc.'s tubular division, too disagrees with those who blame the industry for not picking up on the changes in the tubular market fast enough instead, he faults the volatile political events in the Mideast over the past few years that have lead to the gradual de-control of oil prices and the current feverish drilling activity in the U.S. The phaseout of some price controls and the hike in drilling activity occurred so rapidly that it was nearly impossible for the steel industry to gear up with added tubular capacity, said Mr. Head.

To explain what fully happened, Mr. Head went back eight years to 1972, the first good year for the pipe business.

The market was strong, but not to the point where "the domestic oil country tubular capacity was really challenged." So there was no great urgency to add tubular capacity.

The first time the domestic steel industry had its tubular capacity challenged was in 1974-75. But even then, Mr. Head noted, "it still didn't look like there would be a critical shortage of tubular goods; there were no great predictions of future drilling activity." At the time, oil prices were still controlled and the Mideast relatively calm.

The picture changed radically after 1978. The Shah was ousted from Iran. Fifty Americans were taken hostage in the Iranian embassy. And the Iran-Iraqi conflict flared.

"All of the sudden overseas oil sources looked unreliable, and this encouraged the oil and gas companies to invest heavily in exploration," Mr. Head recalled. As a result, the U.S. is now experiencing the highest level of oil and gas drilling activity in 25 years. And the steel industry is caught in the midst of the explosive demand for tubular products to carry out the drilling, but it doesn't quite have the capacity.

Besides the Mideast political events, Mr. Head said another factor—the sad state of the steel industry—also caused steel companies to be wary of adding tubular production capacity. "Let's face it, the industry has been sick. Its heart hasn't been working too good. And when your heart's not working you try not to exert yourself."

He said the Middletown, Ohio steel company first recognized the future growth potential of the tubular sector about two-years ago. Armco wanted a piece of that pie, so at first it decided to expand its Ambridge, Pa., plant by 20 pct. But these plans were scrapped this year in favor of building a new $400 million seamless tubular facility.

Mr. Head said Armco's decision to construct the new plant was not made on a "whim" and followed thorough research into the tubular market. "It takes a lot of faith that the market will remain the same and that the return on investment will be good."

Mr. Head is for the most part confident that the tubular market will be as strong or stronger in 1983 when Armco's new plant is completed, but he admitted he is "afraid there might be too much capacity then." If all the domestic and foreign steel companies that say they intend to build tubular plants follow through with their plans, "we're going to have an awful lot of pipe."

ourselves talking to the oil companies more and more," said J. R. Sharpe, president of Dravo Engineers and Constructors. "They're bringing fresh impetus."

This push takes in the actual processing of coal. "We are designing and building coal preparation plants," said Mr. Sharpe. Dravo is also building barges for the inland hauling of coal and terminals for ocean shipment. The company recently received a contract to design and build a coal transfer terminal at Newport News, VA. The $50 million facility for Massey Coal Terminal Corp. will be able to handle up to 15 million tons a year.

The Newport News project points up the need to expand the coal transportation system. It's estimated last year's coal exports would have been 10 million tons greater had it not been for the shipping snarl at ports.

There is agitation for a vast program to modernize the ports. Bankers Trust estimates that the next 10 years will see more than $18 billion spent on all forms of coal transportation—rail, pipeline, and water.

Very much in the doldrums is the electric power segment of the energy field. In 1980, only nine power plants with combined capacity of 2,388 megawatts were ordered.

"Normally, it should run about 15,000 megawatts," said Robert Reardon, marketing specialist for Westinghouse Electric Corp.

"They should be ordering more this year," said Mr. Reardon. He expects orders to be placed in 1981 for 10,000 to 15,000 megawatts of capacity. "Anything being ordered for the next several years is coal fired," he adds.

While the consumption slowdown is holding back power plant construction, a more critical factor is money. Unlike the deregulated oil companies, the regulated utilities are having trouble keeping up with inflation. The cost squeeze is reflected in stock prices that are around 80 pct of book value. The low stock prices are unfortunate because the utilities rely heavily on equity financing.

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IT'S BACK TO COLLEGE FOR CEO'S— THIS TIME TO TEACH

An executive-led program has been turned into a full-credit course at Harvard University.

By John D. Baxter

"When you consider that this is an advanced industrial nation," laments a prominent public opinion pollster, "it is appalling that so many Americans know so little about the workings of business."

This same knowledge lack has been observed by industry recruiters who make the rounds of the nation's college campuses.

And many businessmen with extensive public contacts have been shocked by the great number of Americans they meet whose knowledge of business, as one says, "seems based chiefly on TV sterotypes."

It is, of course, easy to read a great deal of significance into the lack of understanding of business in this country. This knowledge blackout, say a number of political analysts, has kept business from developing a strong political constitutency. The resultant lack of legislative clout has hurt business, they note, because government policies these days shape corporate destinies as much—or more—than the decisions made by corporate directors.

Quietly but effectively, the concern of some executives is being put into action on the problem of widespread misunderstanding and lack of understanding of business.

One top executive who has put concern into action is Bernard J. O'Keefe, chairman of EG&G, Inc. The special interest of Mr. O'Keefe is the business knowledge gap among college students.

EG&G, a $600 million technologically diversified corporation, employs 17,000 people worldwide. The company is heavy in technological services and manufactures scientific instruments and mechanical components.

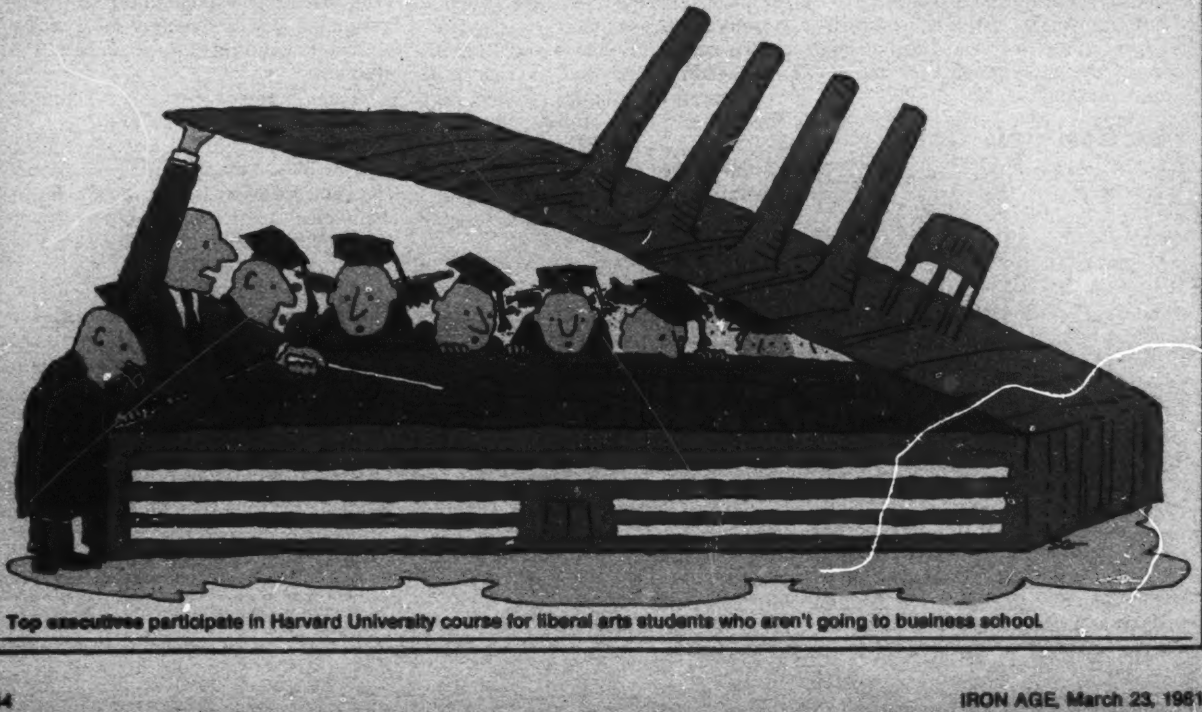
Mr. O'Keefe has made the most of the close proximity of his company headquarters in Wellesley, Mass., to Harvard University to help launch a full-credit college course there designed to give students insight into business.

Importantly, a key part of the course is participation by corporate top executives as classroom lecturers.

"I have felt for some time," says Mr. O'Keefe, "that liberal arts students are getting very little exposure in universities as to how business actually operates."

With this in mind, the EG&G chief executive three years ago "scouted around the Harvard University faculty" and found someone who shared his interest and concern. This was Professor Thomas Raymond of the Harvard Graduate School of Business Administration.

Mr. O'Keefe's germ of an idea got started in one of the undergraduate student houses at Harvard. He and Prof. Raymond set up a 'house' course for liberal arts students who did not intend to go on to the business school. The idea of the course, explains Mr. O'Keefe, was simply to give the students "a little exposure to business."



Top executives participate in Harvard University course for liberal arts students who aren't going to business school.

A house course at Harvard is one given by a faculty member at one of the student houses or dormitories. Such courses, once approved, earn college credits for students who successfully complete them.

"Not as many credits as in a full college course," explains Mr. O'Keefe, "but some credits, nonetheless."

In the original house course set up by the business executive and the Harvard faculty member, Prof. Raymond arranged an agenda designed to give an overview of American business history and practices. Mr. O'Keefe brought in as lecturers a number of corporate chief executives from a cross-section of corporations in Massachusetts. He, himself, experienced at giving lectures at Massachusett's Institute of Technology (MIT), also lectured.

"This program," says Mr. O'Keefe, "worked out very well." He and Prof. Raymond agree that both the students and the executives enjoyed and benefitted from the program.

The proof for these claims, as far as student interest is concerned, is shown in a doubling of the size of the student group in the following year.

And in the latest scholastic year, the course, beefed up in content by Prof. Raymond, became a core curriculum course in Harvard College itself.

The business executives' lecture and discussion aspect remains a key part of the course since it has 'graduated' to inclusion in the full college program. Mr. O'Keefe, in cooperation with the Associated Industries of Massachusetts (AIM), recruits executive participants for the course. The EG&G executive gave the first lecture when the program became a full-fledged Harvard College course.

The course, explains Prof. Raymond, has been named, Business in American Life. It is Social Science #176 course in the college.

As to subject matter, he says, "We are concerned with the functions of a business. We try to introduce the students to what the various business functions do—production, marketing, finance, accounting, organizational behavior and, of course, human resources and the human side of business."

He goes on to explain that the course "is a survey one for liberal arts students who may, or may not, eventually go into business. We are not aiming at the people who are going on to graduate business school."

The course, he points out, is a full-credit one that covers three one-hour sessions per week for 13 weeks. One hour is spent with an executive. Different executives lecture each week. Then Prof. Raymond conducts a lecture and discussion once a week. Also, the class is divided into five sections which are led by teaching fellows. They discuss cases and come together on one day to discuss these cases in a general meeting.

"So," sums up the Harvard teacher, "the students have 39 hours in class, and in addition they have a field project where they put together a business. They have to organize it, arrange financing and so on. Then they present and discuss their company case with all their class colleagues.

The highlight of the course, agrees Mr. O'Keefe and Prof. Raymond, is the remarks by visiting chief executive officers, and the lively question periods that follow.

A Sampler of Student Views

The concern of EG&G's Mr. O'Keefe about young Americans and their views of business is shared by many of the nation's top executives. One of these is T. Mitchell Ford, who is chairman and president of Emhart Corp., a $2 billion diversified and multinational manufacturing company headquartered in Connecticut.

Under Mr. Ford's leadership, Emhart conceived and sponsored a major survey of the attitudes of U.S. college students towards business, corporations, and national issues. This survey, which drew nearly 1000 respondents from 153 colleges and universities was run in the spring of 1980 by the Foundation for Student Communications, Inc., and analyzed by the Princeton Research Group. Mainly, the respondents were liberal arts majors, mostly juniors and seniors, 20 to 22 years of age.

In sum, the survey shows that American students have faith in the free enterprise system. However, Mr. Ford notes, "Whereas they are optimistic and confident about their immediate work, they are less trusting of large corporations." This latter finding underscores the important for college-level programs such as the one, Business in American Life, established by Mr. O'Keefe of EG&G.

Below, is a sample of questions and answers taken from the Emhart survey.

Q. *"Do you think the 'system' (priviate enterprise) still, basically, works in the United States?"*

A. Five-sixths of United college students show some faith in the free enterprise system.

It works most times	48 pct
Yes, it still works	35
No, it doesn't work	8
I don't know	9

Q. *"Do you agree that the business world is cold and impersonal?"*

A. Sometimes the business world is cold and impersonal, and sometimes it is not, according to nearly three college students in five.

Sometimes yes, sometimes no	58 pct
Yes, I think it is	21
No. I really don't think so	17
I'm not sure	4

Q. *"Do you think large corporations, on balance, have been doing a good job for the country?"*

A. Students' opinions are divided as to whether or not large corporations have been doing a good job for the country.

Yes	36 pct
No	35
I don't know	27
No answer	1

Q. *"Do you feel large corporations have too much influence on our society and national affairs?"*

A. Three quarters of the college students believe large corporations have too much influence.

Yes, I do	76 pct
No, just the right influence	20
Not enough influence	3
No answer	2

Q. *"Do you think the activities, productivity and profitability of large corporations should be regulated more? Or less?"*

A. Almost half the collegians think large corporations should be more regulated.

More regulated	46 pct
Kept the same	27
Less regulated	23
No answer	4

Q. *"Do you think some trade-off should be made to obtain a better balance between environmental and social controls on the one hand, and economic development (e.g. energy, etc.) on the other?"*

A. Approximately three-fifths of the college students believe that a trade-off should not be made between environmental control and economic development; tight controls should be maintained.

No, tight controls should be maintained	62 pct
Yes, controls should be relaxed	33
No answer	5

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The student-executive interchange is enhanced further by luncheon get-togethers. For these luncheons, the class breaks into small groups to give students a better chance to carry on their discussions with the business executives on a more informal basis.

Prior to the classroom visit by each executive-lecturer, students are given annual reports and other material on each executive's company. Mr. O'Keefe, in conjunction with AIM, selects executives for each session. A special effort is made to draw top executives from a broad cross-section of industry and commerce.

"That's important," says Prof. Raymond, regarding the cross-section process. "Most undergraduates think of business as banks, investment brokerage firms and consulting firms. But we bring in executives from retailing, atomic research, light industry, heavy goods manufacturing and so on."

A review of the listing of just some of the participating top executives and their companies gives a clear idea of their breadth of business representation. Guest lecturers at the spring series, aside from Mr. O'Keefe, included:

Robert P. Henderson, president, Itek Corp.; Avram J. Goldberg, chairman, Stop & Shop Companies, Inc.; S. G. Jerrits, president, Honeywell, Inc.; Richard D. Hill, chairman, First National Bank of Boston and Nelson S. Gifford, president, Dennison Manufacturing Co.

Is the course a success?

In terms of student interest, the answer is clearly an unqualified 'yes.' The course is limited to 100 students. But in the last semester of this first year of the course, some 150 students applied to take it.

Typically, one student noted the value in gaining exposure to the issues confronting business, enjoyed the personal contact and thought the series a "smashing success."

A favorite line of questioning of students to the visiting executives, says Mr. O'Keefe, centers on how they got started in their business careers. Students want to know what motivates the executives. Too, sometimes questions get into more specific areas of company operations. He recalls one student recently questioning an executive on the choice of LIFO versus FIFO at his company.

Questions aside, it is the face-to-face contact between executives and students that seems to bear the real fruit. When Mr. O'Keefe is asked whether the course affects the way students think about business and businessmen, he replies, "It sure does." He says he often hears from students the comment about executive lecturers, "I never met anyone like that before."

One of the lecturers, A. L. Bolton, Jr., chairman of Bolton-Emerson Inc., noted, "The most revealing thing to me was that these impressive young men and women seemed somewhat surprised that corporate executives have human form . . . I had to believe they had been conditioned to expect something altogether different."

When the course was first started as a 'house' course, Mr. O'Keefe says there were student questions such as, "Is it really like you tell it."

But students have become more serious and less antagonistic. Prof. Raymond agrees. He says, "I find that I don't have to 'sell' business at all to the students."

An interesting thing is that executives are breaking down the doors to get into the program.

In terms of willing participation by chief executives, the answer is another ringing 'yes.' Mr. O'Keefe notes, "An interesting thing is that executives are breaking down the doors to get into the program. It has become something prestigious."

He adds that he gets calls from executives who want to lecture. "As a matter of fact," he adds, "I had to turn down a few people."

The course has been so successful in the minds of those connected with it, that Mr. O'Keefe and AIM are talking now with MIT about doing something along the same lines for engineering students.

Members of AIM have acclaimed the Business in America course to be a great success. AIM has special insight into the course's value because it monitors the course, helps Mr. O'Keefe line up executive lecturers and gets feedback from its membership of business executives.

Peter L. Rollins, AIM's director of membership development, says the course has been a "significant learning experience for the CEOs as well as the students."

The comments he has heard from executive lecturers in the series have been almost always hearty endorsements of the course.

"Students really seem to get turned on," said one executive. Another called his participation, "a most meaningful experience."

AIM president Walter R. Muther has said, "The truth is that our corporate presidents and chairmen enjoy the series as much as the students. We've got a waiting list of CEOs and wouldn't have much problem, I think, scheduling such lecture series on half a dozen colleges."

Mr. Rollins adds another plus point. "The course," he says, "is also the best kind of grass-roots public relations for business among a generation of young people who are going to be the opinion leaders and decision makers in a few short years."

When Prof. Raymond is asked whether he advocates wider use in this country of such courses, he heartily endorses the idea.

Fitting such courses into broader context, Mr. Raymond says, "I think that anything business can do to improve its relationship with the public, it should do it.

"Business has had a bad press. Public attitudes about business have been unfavorable. We have all done, I suppose, a poor job of bringing our story to the public.

"It is hard to think of a better starting point to do that than on college campuses."

He adds, "I think courses like this one, especially with businessmen involvement, help a great deal."

Mr. O'Keefe, a vice chairman of the National Assn. of Manufacturers, plans to bring the idea of the courses to that group's board of directors to see if they want to sponsor such courses on a national basis.

Could other companies, individually, get such courses launched?

Mr. O'Keefe feels they can, and rather readily.

"If an executive wanted to launch such a course in his area," he says, "the best thing for him to do would be to go to the local state industry group similar to AIM. These industry groups can offer valuable staff time and expertise and can assist greatly in lining up chief executive officers as lecturers.

"This is the kind of thing such industry groups like to do, and do well."

The EG&G chief executive officer says he would be happy to talk with interested executives about such courses and put them in touch with others who can help. ☐

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METALWORKING ORDER TRENDS

Slippage doesn't mean orders are on road to Recession City

New orders for durable goods, after inching upward for four straight months, skidded in January. Orders for the month came to $81.1 billion, down 1.9 pct from December.

There seems little point in waving a red flag because of the January orders decline.

A better gage of just what new orders are doing is seen in a glance at the 4-month pattern from October of last year through January of this year. In that span, dollar volume of orders reached a high of $82.7 billion and a low of $80.7 billion. Correct this range for inflation, and what appears is a plateau.

So, in looking back a bit, it can be said that orders volume shot out of a midyear slump and in the fall-winter period steadied on a plateau.

A plateau doesn't tell much, as statisticians say. But January orders at $81.1 billion were still up some 22 pct from June. So, what is known is that the recent 4-month plateau is a good, high one.

The big pulldown in orders in January came in the steel industry. Orders received by steel producers fell by 24 pct to $1.6 billion. This was steel's third straight month of decline and the sharpest month-to-month slide since a 27 pct drop in March 1975.

But later data on the steel industry than shown in the Commerce Dept.'s January report, gives real hope that something of a turnaround is shaping up in steel. Major steel producers finished February with order rates approaching 100 pct of capacity. There has been advanced buying in steel, still a steady rise in orders is now reported out of Pittsburgh.

Another orders soft spot in January was in the transportation equipment industry. This industry group was hit with a 6.3 pct slide to $16.1 billion.

But machinery lines fared well in January. Both electrical and non-electrical machinery producers saw orders go up by more than 7 pct from December.

The rise in machinery orders volume made the figures on capital goods producers look good. Orders received by these producers in January rose by more than 10 pct to $23.9 billion. That volume just about matches the record monthly high set in January of last year.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$295.0*	$296.2	$284.3
Manufacturing, Total	4th Qtr.	115.4*	116.4	106.6
Manufacturing, Durable Goods	4th Qtr.	57.4*	58.2	55.0
Mining Industry	4th Qtr.	15.3*	13.9	11.9
Key Indicators, Durable Goods Manufacturing				
New Orders	Jan.	81.1	82.7	81.5
Shipments	Jan.	80.4	80.0	77.9
Inventories	Jan.	165.0	161.9	154.0
Unfilled Orders	Jan.	280.5	279.7	271.4
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Jan.	23.9	21.7	23.9
Capital Goods Producers, Defense Industries	Jan.	4.2	5.8	3.4
Primary Metals, Total	Jan.	11.1	12.9	13.5
Steel (SIC 331)	Jan.	5.2	6.8	5.8
Iron & Steel Castings (SIC 332)	Jan.	1.1	1.0	1.3
Nonferrous Metals	Jan.	4.8	5.1	6.4
Nonelectrical Mach.-Equip. Industries, Total	Jan.	16.2	15.1	15.2
Engines & Turbines	Jan.	1.6	1.0	1.4
Farm Machinery & Equipment (Shipments)	Jan.	1.2	1.1	1.1
Construction, Mining & Materials Hdlg. Equip	Jan.	3.2	3.0	3.1
General Industrial Machinery	Jan.	1.3	1.2	1.3
Fluid Power Equipment** (Index-1972=100)	Jan.	269	266	304
Metalworking Machinery	Jan.	1.0	1.0	1.2
Machine Tools, Total (Millions $, Unadjusted)	Jan.	279.6	299.2	466.9
Machine Tools, Metal-Cutting***	Jan.	209.4	245.0	385.1
Machine Tools, Metal-Forming***	Jan.	70.2	54.2	81.8
Electrical Mach. & Equip. Industries, Total	Jan.	11.4	10.6	10.6
Elec. Transmission Equip. & Industrial Apparatus	Jan.	1.9	1.9	1.6
Household Appliances	Jan.	1.2	1.2	1.2
Communication Equipment	Jan.	3.8	3.3	3.3
Transportation Equip. Industry, Total	Jan.	16.1	17.2	16.4
Motor Vehicles & Parts (Shipments)	Jan.	9.3	9.6	9.3
Aircraft, Missiles & Parts	Jan.	5.0	5.0	5.6
Shipbuilding & Military Tanks	Jan.	.9	1.7	.7
Fabricated Metal Products, Total	Jan.	9.8	10.5	9.1
Instruments, Total	Jan.	3.7	3.9	3.6

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

EFFECTIVE MAR. 2, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	301	275	245	288
Buffalo	52	52	50	58
Pittsburgh	455	442	429	423
Youngstown	121	120	117	134
Cleveland	174	167	159	161
Detroit	185	185	178	196
Chicago	650	623	634	603
Cincinnati	114	114	111	92
St. Louis	94	90	87	67
Southern	257	254	254	255
Western	148	152	142	155
U.S. Production	2,551	2,474	2,406	2,432

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective March 2, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,551	2,474	20,318	20,346
Capability Utilization Rate	85.2	82.6	80.5	81.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/1/81)	23.598	23.598	23.362	21.130
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$102.83	$103.50	$ 97.83	$104.50
No. 2 bundles	$ 72.83	$ 73.50	$ 70.83	$ 68.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$110.50	$109.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	93.50	106.50
No. 1 steel, Chicago	106.50	109.50	95.50	100.50
No. 1 bundles, Detroit	106.50	101.50	92.50	110.50
Low Phos., Youngstown	104.50	104.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	102.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	132.50	129.50	145.50

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*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective March 2, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	82.65-85.00	83.05-86.00	3/ 2/81
Lead	32.00-34.00	32.00	3/ 2/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20-$25
Gold per troy oz.	$465.50
Indium, 99.9%, per troy oz.	$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$393-$403
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$12.40
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Feb. 23—618.71
Feb. 24—623.70
Feb. 25—621.71
Feb. 26—620.12
Feb. 27—605.25

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68⅛	63
Red brass	73⅜	67⅜
Comm. bronze	75⅝	68⅝
Mang. bronze	66⅜	64⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	62
Light copper	53
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	39
Hvy. yellow brass turnings	30
Radiators	51

Aluminum

New mixed clips	39	-40
Old sheet	35	-36
Old cast	35	-36
Clean dry borings	36	-37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	41	—42
No. 1 composition	58	—59
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	49	—50
Yellow brass rod ends	41	—42

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAR. 2, 1981

MATERIALS NEWSFRONT

(Effective March 2, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$110.00 to $111.00
No. 2 hvy. melting	100.00 to 101.00
No. 1 dealer bundles	128.00 to 129.00
No. 1 factory bundles (auto)	128.00 to 129.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	128.00 to 129.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	100.00 to 101.00
No. 1 RR hvy. melting	121.00 to 122.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	112.00 to 113.00
RR specialties	127.00 to 128.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$106.00 to $107.00
No. 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	119.00 to 120.00
No. 1 factory bundles (auto)	126.00 to 127.00
No. 2 dealer bundles	83.00 to 84.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	115.00 to 116.00
Shredder scrap	111.00 to 112.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	69.00 to 70.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No.1 RR hvy. melting	111.00 to 112.00
Scrap rails, random lgth.	104.00 to 105.00
Reroller rails	132.00 to 133.00
Rails, 2 ft. and under	136.00 to 137.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	167.00 to 168.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	123.00 to 124.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	106.00 to 109.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	98.00 to 101.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	90.00 to 93.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	81.00 to 82.00
No. 1 dealer bundles	106.00 to 107.00
No. 2 bundles	54.00 to 55.00
No. 1 busheling	101.00 to 102.00
Drop forge flashings	95.00 to 96.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	700.00 to 710.00
18-8 turnings	570.00 to 580.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	99.00 to 100.00
No. 2 dealer bundles	68.00 to 69.00
Machine shop turnings	18.00 to 19.00
Shoveling turnings	24.00 to 25.00
Low phos. plate	104.00 to 105.00
Electric furnace bundles	104.00 to 105.00
Galvanized bundles	91.00 to 92.00

Cleveland

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	87.00 to 88.00
No. 1 factory bundles	108.00 to 109.00
No. 2 bundles	40.00 to 41.00
No. 1 busheling	88.00 to 89.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	18.00 to 19.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	95.00 to 96.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	55.00 to 56.00
No. 1 busheling	74.00 to 75.00
No. 1 dealer bundles	72.00 to 73.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	15.00 to 16.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	24.00 to 25.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	101.00 to 102.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 95.00 to $ 96.00
No. 2 heavy melting	85.00 to 86.00
No. 1 dealer bundles	95.00 to 96.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	94.00 to 95.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	85.00 to 86.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	107.00 to 108.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	95.00 to 96.00
Rails, 18 in. and under	117.00 to 118.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	71.00 to 72.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	54.00 to 55.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	95.00 to 96.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	65.00 to 67.00
No. 1 dealer bundles	87.00 to 89.00
No. 2 bundles	36.00 to 38.00
No. 1 busheling	90.00 to 92.00
Shredder scrap	84.00 to 86.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	22.00 to 24.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	70.00 to 72.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 85.00
No. 2 heavy melting cut 2 ft. and under	85.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	88.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	35.00
Short steel turn.	43.00
Mixed bor. and turn.	35.00
Cast scrap	60.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	56.00 to 57.00
Shredder scrap	111.00 to 112.00
Cut structural plate 2 ft. and under	123.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00

EFFECTIVE MAR. 9, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	295	301	245	289
Buffalo	68	52	48	61
Pittsburgh	435	455	428	437
Youngstown	130	121	123	132
Cleveland	172	174	171	163
Detroit	186	185	178	193
Chicago	656	650	628	621
Cincinnati	107	114	112	102
St. Louis	100	94	91	80
Southern	262	257	261	255
Western	149	148	148	158
U.S. Production	2,560	2,551	2,433	2,491

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective March 9, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,560	2,551	22,878	22,847
Capability Utilization Rate	85.5	85.2	81.0	82.0

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/1/81)	23.598	23.598	23.362	21.130
Pig Iron** (Net ton= 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$105.17	$102.83	$ 97.50	$102.83
No. 2 bundles	$ 72.83	$ 72.83	$ 71.17	$ 67.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$117.50	$110.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	104.50
No. 1 steel, Chicago	106.50	106.50	96.50	97.50
No. 1 bundles, Detroit	106.50	106.50	94.50	105.50
Low Phos., Youngstown	113.50	104.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	102.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	141.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective March 9, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	82.20-84.00	81.55-84.00	3/ 9/81
Lead	36.00	34.00	3/ 6/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20-$25
Gold per troy oz.	$467.00
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$395-$410
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35-$9.70
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$11.98
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Mar. 2—602.31
Mar. 3—597.92
Mar. 4—601.06
Mar. 5—599.51
Mar. 6—598.83

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68⅛	63
Red brass	73⅜	67⅜
Comm. bronze	75⅝	68⅝
Mang. bronze	66⅝	64⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71	
No. 2 copper wire	61	
Light copper	52	
No. 1 composition	69	
No. 1 comp. turnings	67	
Hvy. yellow brass solids	40	
Hvy. yellow brass turnings	31	
Radiators	51	
Aluminum		
New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	41	—42
No. 1 composition	58	—59
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	49	—50
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	16	—17
Whole batteries	8	— 9
Type metal	17	—18
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAR. 9, 1981

MATERIALS NEWSFRONT

(Effective March 9, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$117.00 to $118.00
No. 2 hvy. melting	107.00 to 108.00
No. 1 dealer bundles	128.00 to 129.00
No. 1 factory bundles (auto)	128.00 to 129.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	128.00 to 129.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	100.00 to 101.00
No. 1 RR hvy. melting	121.00 to 122.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	112.00 to 113.00
RR specialties	127.00 to 128.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$106.00 to $107.00
No. 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	123.00 to 124.00
No. 1 factory bundles (auto)	126.00 to 127.00
No. 2 dealer bundles	83.00 to 84.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	115.00 to 116.00
Shredder scrap	112.00 to 113.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	52.00 to 53.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	72.00 to 73.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No.1 RR hvy. melting	111.00 to 112.00
Scrap rails, random lgth.	104.00 to 105.00
Reroller rails	132.00 to 133.00
Rails, 2 ft. and under	136.00 to 137.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	167.00 to 168.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	127.00 to 128.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	106.00 to 109.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	98.00 to 101.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	90.00 to 93.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	83.00 to 84.00
No. 1 dealer bundles	106.00 to 107.00
No. 2 bundles	54.00 to 55.00
No. 1 busheling	103.00 to 104.00
Drop forge flashings	91.00 to 92.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	560.00 to 570.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	74.00 to 75.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	113.00 to 114.00
Electric furnace bundles	113.00 to 114.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	97.00 to 98.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	98.00 to 99.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	24.00 to 25.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	105.00 to 106.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 busheling	84.00 to 85.00
No. 1 dealer bundles	82.00 to 83.00
No. 2 dealer bundles	49.00 to 50.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	110.00 to 111.00
Structural and plate, 2 ft. and under	118.00 to 119.00
Rails, 2 ft. and under	96.00 to 97.00
Scrap rails, random lgth.	76.00 to 77.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	101.00 to 102.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 95.00 to $ 96.00
No. 2 heavy melting	85.00 to 86.00
No. 1 dealer bundles	95.00 to 96.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	94.00 to 95.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	85.00 to 86.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	107.00 to 108.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	95.00 to 96.00
Rails, 18 in. and under	117.00 to 118.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	71.00 to 72.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	54.00 to 55.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	95.00 to 96.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	68.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to $ 80.00
No. 2 hvy. melting	69.00 to 71.00
No. 1 dealer bundles	90.00 to 92.00
No. 2 bundles	40.00 to 42.00
No. 1 busheling	93.00 to 95.00
Shredder scrap	86.00 to 88.00
Machine shop turn.	15.00 to 17.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	70.00 to 72.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	88.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	56.00 to 57.00
Shredder scrap	111.00 to 112.00
Cut structural plate 2 ft. and under	123.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00

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1981

Chilton's

APRIL 6, 1981

IRON AGE

SPECIAL METAL PRODUCING MANAGEMENT EDITION

ARE FOUNDRIES COMING UP SHORT ON CAPACITY?

FIRST QUARTER REPORT – PUTTING THE PUNCH BACK IN METALWORKING

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VOL. 224 NO. 10

IRON AGE

APRIL 6, 1981

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Management in America

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING PRICE TRENDS

Is inflation's fast pace slowing just a bit?

There seems to be a grim permanence to an 11 to 12 pct inflation rate in metalworking product lines. It has been hanging around for more than a year.

And the price news in February was more of the same. The year-to-year price inflation for the 23 metalworking lines shown on the table here averaged 11.4 pct. As can be seen, the inflation rate in February ranged from 6.7 pct for heating equipment to 20.2 pct for ball and roller bearings.

Still, metalworking prices are not showing signs of accelerating. In fact, there is some small evidence that upward price pressures might be moderating.

If the price rise in February over the previous month is annualized, it comes to a 10.7 pct rise. That looks a bit better than the year-to-year rate of 11.4 pct.

If prices are indeed easing, it shows that market demand still plays a role in determining prices—right along with the recently more powerful price determinant of costs.

Machine tools offer a good example. About a year ago, machine tool orders were booming. Price hikes then that ran at 16 to 18 pct on a year-to-year basis, reflected this strong demand. But now, at a time when costs of machine tool builders are still rising sharply, the prices of their products are not rising as sharply. In February, tool prices ran at a year-to-year increase rate of 12 to 13 pct.

Capital equipment, generally, rose at a rather sharp 13.2 pct annual rate in February. That was about the same as in January. This was not as high as it has gone in the recent past.

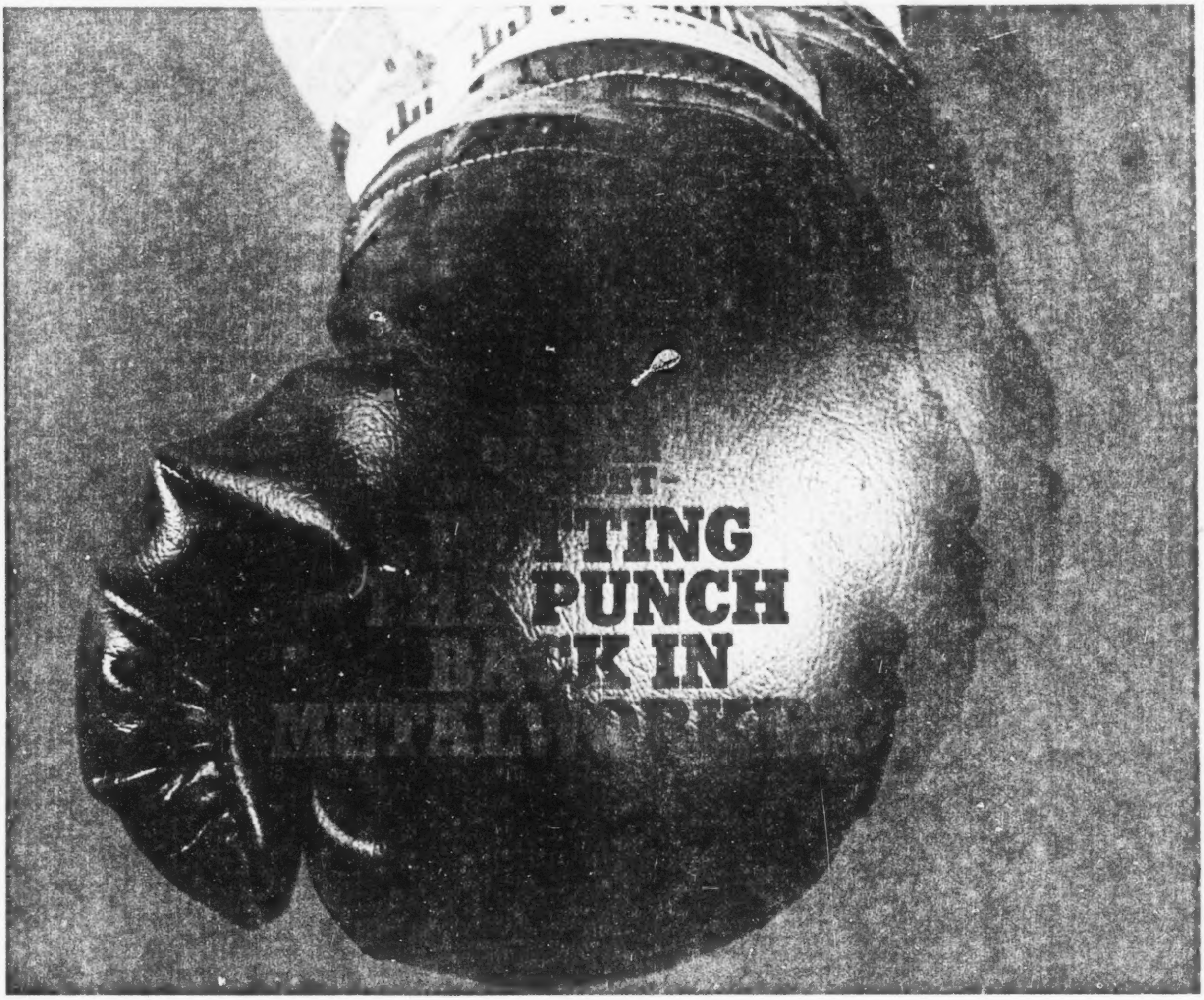
It can be expected that capital equipment prices will slow in their rate of rise. In February, the month-to-month percentage price increase for capital goods, at 1.1 pct, ran well ahead of the .8 pct increase for all producer finished goods. That difference is unlikely to continue in the face of the current softer demand for capital goods than for producer goods generally.

In sum, as the first half of 1981 develops, it appears that inflation still rolls on—strongly. But there are signs that sluggish demand in a number of sectors may be starting to slow its pace.

Latest Month Covered: February, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	334.9	+ .3	+13.3
Metal Forming Machine Tools	370.5	+ .1	+11.6
Agricultural Machinery & Equip	277.2	+ 1.4	+10.9
Construction Machinery & Equip	308.4	+ 1.1	+10.8
Special Industry Mach. & Equip	299.3	+ 1.4	+13.7
Industrial Process Furnace & Ovens	317.0	+ .9	+13.2
Industrial Material Handling Equip	265.9	+ .2	+ 8.3
Pumps, Compressors & Allied Equip	312.9	+ 1.7	+14.6
Fluid Power Equip	214.5	NC	+12.0
Mechanical Power Transmission Equip	284.7	+ .4	+13.2
Automobiles	199.2	− .1	+ 9.2
Motor Trucks—Light	239.6	NC	+13.2
Motor Trucks—Heavy	269.4	+ 1.4	+13.4
Railroad Equipment	334.4	+ 2.0	+11.7
Fabricated Metal Structural Products	285.6	+ .9	+10.0
Electric Motors	265.5	+ 1.4	+ 7.4
Valves & Fittings	300.4	+ .9	+ 9.1
Ball & Roller Bearings	293.3	+ 2.6	+20.2
Cutting Tools & Accessories	243.2	+ .2	+ 9.5
Heating Equipment	216.1	+ .3	+ 6.7
Plumbing Fixtures & Brass Fittings	259.0	+ 1.4	+ 9.4
Metal Containers	313.8	+ .8	+10.3
Miscellaneous Metal Products	264.0	+ 1.0	+ 9.3

Data based on U.S. Labor Dept.'s Producer Price Index



This is the year the U.S. economy will fight its way back to solid growth—led by metalworking industries.

"This economy right now, if you stop and think of it, is downright scary."

It was a corporate economist who spoke those words. He was referring to the fact that the current sluggish and uncertain U.S. economy was operating in a national policy vacuum.

He has a point. The big economic revival program of President Ronald Reagan is just starting its run through the Congressional gauntlet.

And there is presently no on-going economic policy from the previous Administration in action. Even the largely symbolic Carter wage-price constraints have been dismantled.

The only policy gun in place and firing away is at the Federal Reserve fortress. The Fed, true to its colors, continues to blast away at on-marching inflation.

Of course, it is easy to find those who say that a policy vacuum is the best thing that could happen to the economy.

That may be. But the absence of a structured policy—there is never really a policy vacuum—means a close look at natural business cycle forces is now all the more important in forming a forecast.

At this time, the consensus forecast for the U.S. economy calls for a water-treading first half. "Growth, but barely," as one business executive puts it. And the consensus calls for a greatly stepped-up business and economic growth rate in the last half of the year.

This consensus forecast is shared by many of the metalworking industry executives that *Iron Age* editors talked with in preparing the detailed industry outlooks that follow this overall report.

Iron Age's forecast on the overall economic setting in which metalworking will likely be operating this year fits rather closely with the consensus forecast. The numbers on this overall forecast are seen in the charts and the table here on GNP growth, inflation rate and expected spending for plants and equipment and durable goods.

There is no magic to the expected quickening pace of business at the midyear point. It is simply going to take up to that time for the presently chugging economy to build up a good head of steam.

There are signs that the economy, through the first half, will very likely be strong enough to stave off any return of recession. There are in the forecasting woods, however, those bears who see a 'double-dip' recession as a possibility during at least one

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quarter of the year. This scenario calls for a painful sequel to the GNP slide that hit in the second quarter last year—hence, the 'double-dip' label.

The bears' ranks are thinning as late developing signs show the economy marching to a beat that grows stronger, not weaker.

The in-place recovery itself is the best sign that it will likely continue. Following a 9.9 pct collapse in real GNP in the second quarter last year, the closing two periods showed rises of 2.4 pct and 4.0 pct, respectively. Clearly, recovery has done some 'digging in.'

Significantly, in terms of a shift in sentiments among forecasters, one top source on successive weeks just past, raised its sights on first quarter growth from plus 1 pct to 2 pct to 3 pct. As little as a month ago, this source had been betting on negative growth for the opening period this year.

One of the hopeful signs of continuing recovery at this time is the recent easing of interest rates. It is true, interest rates may well bound up again, and likely will. But a special point is that these rates up to this time have not been on a one-way path to the sky.

Last April, the economy was shaken to its boots when the prime lending rate vaulted to 19.5 pct. Less than 90 days later, this rate was down to 11 pct.

Another point to keep in mind is that it was not just high interest rates that brought on the second quarter crash last year. This fall, say a number of analysts in retrospect, was caused not so much by high interest rates but more likely by the credit controls invoked in March by President Carter. The Fed was the medium to carry out the President's intentions.

Other signs of strength in the economy include six straight months of increases in industrial production and nine straight months of climbing retail sales. Retail sales, as of the start of March, were up 15 pct from last May, a rise rate that outpaced price hikes. This means a good chunk of the sales increase has been real and is not just another one of inflation's mirror tricks.

Also worth noting, employment has held up very well. And, of course, along other lines, many now believe that the worst is over for the luckless U.S. auto industry. Any turnaround here at all would be a big plus for recovery. Just about all sectors of industry, from steel to glass to textiles, get a hypo when the auto industry moves ahead. The ripple effect through the economy is tremendous.

But perhaps the most encouraging sign of all for real recovery—and less than killing interest rates—is a slight giving at the edges by inflation. This doesn't mean price dips; it means only slowed rise rates. But that is still a thundering big plus for the economy.

Consumer prices, in the latest 3-month span, averaged .8 pct per month increases. In the previous 3-month span, they averaged 1.0 pct rise per month. On an annual basis, that is the difference of a 9.6 pct rise rate and a 12.0 pct rate.

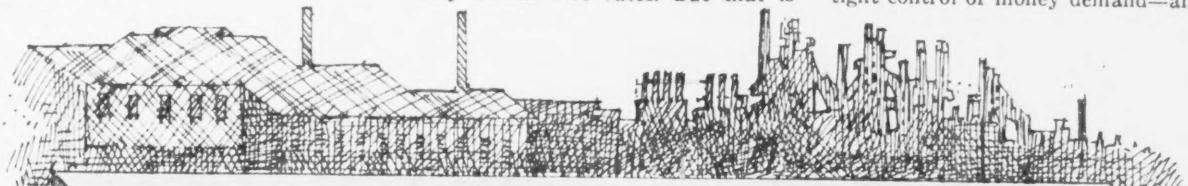
And producer prices of finished metals and metalworking goods gave a hint of some slight cooling. In the latest monthly readings, the annual rise rate was 10.7 pct. Over the preceding 12-month span of time, that annual rate was 11.4 pct.

Further, the dramatic jump in manufacturing industry productivity in the closing quarter of 1980 heralds more of the same throughout the entire private sector. And nothing can cut down inflationary pressures like jumps in productivity.

The productivity rise in manufacturing in the December quarter came to a mighty 11.7 pct rate as production gains strongly outpaced additional man-hours. Notably, manufacturing, in a business upswing, leads the economy in productivity gains—and other sectors usually soon follow.

While many signs seem to assure continued business recovery, and quite likely an accelerated recovery, threats and uncertainties still exist in the economy.

The Fed seems dead serious about keeping a lid on inflation through tight control of money demand—and



Plant Spending: A Slow Start and a Fast Finish

Billions of Dollars, Seas. Adj. Annual Rates			Percent Change	
Quarters	Total Spending	Equipment Only	Equipment	Structures
1980				
1st Qtr.	$297.8	$189.7	+2.5%	+3.0%
2nd Qtr.	289.8	181.4	−4.4	+0.2
3rd Qtr.	294.0	186.8	+3.0	−1.0
4th Qtr.	300.0	189.5	+1.4	+3.0
1981*				
1st Qtr.	307.5	195.2	+3.0	+2.2
2nd Qtr.	316.7	203.0	+4.0	+3.5
3rd Qtr.	335.7	217.2	+7.0	+6.2
4th Qtr.	364.2	236.8	+9.0	+8.7

*IA Forecast

Source: U.S. Dept. of Commerce

letting interest rates go where they may. It's a fairly new and potentially dangerous game. Towering interest rates have made a shambles of many corporate balance sheets.

Too, the recent behavior of the index of leading indicators has been discouraging. And low levels of personal savings don't augur well for near-future step-ups in consumer buying. It is consumer buying that accounts for two-thirds of the economy.

Still, on balance, it appears the ongoing recovery can shrug off the bad news and keep on rolling. By midyear, it should be gaining strength and moving quickly towards a rendezvous with President Reagan's economic revival program, as that program in whole or in part, clears Congress.

The numbers on the forecast for the economy are shown in the GNP chart here. For the year 1981, this projection comes out to plus 1.6 pct. That is far ahead of the Administration's forecast of 1.1 pct.

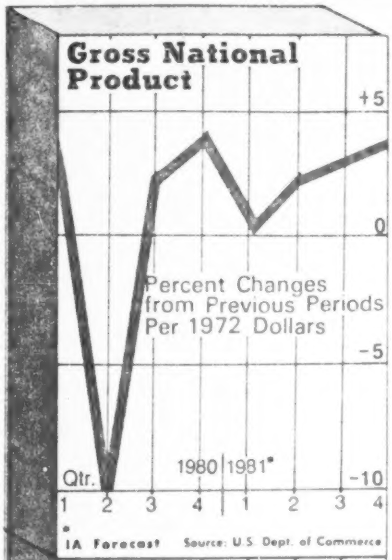
Projected growth for 1981 is not really much. But still, what little growth is foreseen would still be a turnaround from the minus .1 pct mark for last year. Too, near yearend, growth in 1981 should be running at an annual rise rate of 4 pct to 5 pct.

For inflation, the Administration forecasts an 8.3 pct rise; *Iron Age* anticipates 9.4 pct. Still, these forecasts and most others, see prices cooling a bit from the high-fever levels experienced in the closing quarter last year and the expected level for the opening period this year.

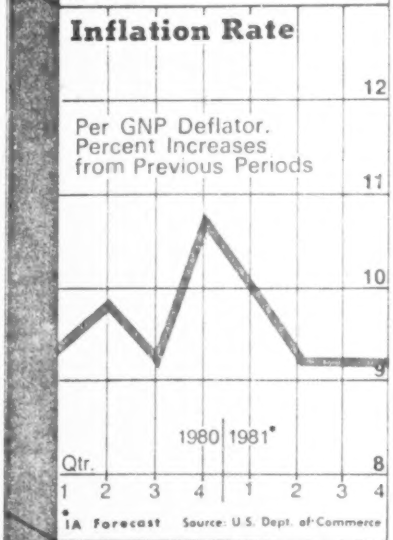
The forecast numbers on 1981 plant and equipment investment shown in the table here come up stronger than do the numbers on GNP. There are two reasons for this. First, plant spending has lagged GNP for some time. Some catch-up is expected based on past cyclical behavior of this spending and the overall growth rate.

Also, business investment will likely be the first sector of the economy to get a boost from the new Administration economic program. The chairmen of both the Senate and House tax-writing committees have said they expect the accelerated depreciation features of the new tax bill to be retroactive to March, or possibly, January 1, 1981.

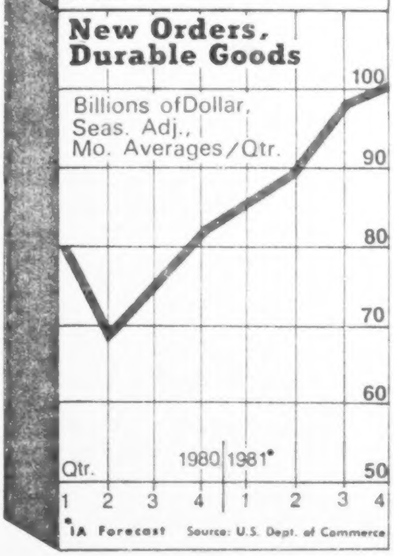
In 1981, plant spending seems set to run up to about $330 billion, up some 12 pct from last year. In real terms, that comes out to a 3 pct to 4 pct rise.


Gross National Product

*IA Forecast Source: U.S. Dept. of Commerce


Inflation Rate

*IA Forecast Source: U.S. Dept. of Commerce


New Orders, Durable Goods

*IA Forecast Source: U.S. Dept. of Commerce

In durable goods new orders, for which metalworking products account for 85 pct of the volume, this should be a 'go' year. In the second period last year, new orders hit a bottom at $68.7 billion monthly average. In the closing two quarters, they rose to $75.1 billion, then $81.5 billion. That rising pattern seems destined to carry on through the first two quarters this year. Then, comes a takeoff.

One big assumption underlying 1981 strength in new orders for durable goods is an improvement in auto sales.

In light of the awful auto year of 1980, that improvement seems a certainty.

In sum, 1981 promises to be a far better year for U.S. business than was 1980. Recovery is underway, albeit, quite moderately.

And there is the bright promise of new, positive economic policies being in action at least on one important front.

If there is a remaining, nagging 'but' for this year, it is inflation. The tiger remains untamed. It has only been beaten back a bit at this time.

If inflation—the hard-to-predict element in the economy—shows signs of resurgence this year, there is every reason to believe the Fed would lower the boom as it did last year. While high interest rates have so far hurt business in a number of ways, they have not in themselves directly brought on a recession. That doesn't mean they couldn't.

Henry Kaufman, chief economist for the investment firm, Salomon Brothers, says ominously, "I have concluded we will be in a garrison economy in 1981 and it will be difficult to lift the siege this year."

Economist Kaufman, considered an oracle of the first order when it comes to interest rate behavior, looks for a resurgence of the prime rate beyond the record 21.5 pct of last year. He doesn't say how far past that record.

Consumer surveyist Albert Sindlinger expects the prime rate to reach 28 pct to 30 pct by late summer. He was one of the first to predict that the prime rate would reach 20 pct in March of last year, and that it would climb to 21 pct in December.

The 21 pct rates are a known factor for their impact on business. But when it comes to rates of 28 pct to 30 pct, it is simply not known what these rates could do to the economy. One banker concludes, "If rates like that hit us, all bets are off on rosy 1981 forecasts." ☐ John D. Baxter

QUARTERLY FORECAST

Steel

So far, 1981 has been a pleasant surprise for steel producers.

Shipments of 23 million tons in the first quarter will be up about one million tons from the fourth quarter of 1980. Shipments will be up another million and a half tons in the second quarter of this year.

People are starting to say the full year will see 94 million tons shipped after all.

There are also those who feel the market picture is too good to be true. Steel producers came into the year expecting the worst. Shipments were supposed to decline and orders were expected to lag.

Instead, both orders and shipments rose sharply. Steel producers then started talking about a second quarter letdown. That isn't developing either. April is shaping up as a better month than March. May schedules are filling up rapidly.

There are still worries, but some steel people are starting to take the market strength at face value. Two facts are cited. First, there is no excess inventory in the system. Last year's slump wiped out 7 or 8 million tons of steel inventory. Steel stocks are now down to rock bottom.

The second source of reassurance is the steel consumption rate. Something like 104 million tons of steel will be chewed up in 1981. That's about 15 million tons less than the peak of 1973, but it is still a lot of steel. If imports stay down, the consumption rate should mean domestic shipments of more than 90 million tons in 1981.

There are the usual imponderables. Shipments of steel to the auto industry have held up better than auto sales and production figures would indicate. It's possible the long-awaited cancellations from auto companies will finally arrive.

However, the down-side risk in the auto situation is slight. Auto sales and auto steel orders can't get very much worse. They could get a lot better if people ever start buying cars.

The steel import situation is always a worry for domestic producers. The January import total of nearly 1.3 million tons was down from December of 1980 but slightly up from January of last year.

With the trigger prices now supposedly taking full effect, the January import number was not encouraging. Domestic mills have been counting on imports as low as 12 million tons this year. With the St. Lawrence Seaway closed, the January import tonnage would suggest a far higher total. Statistics on one month don't establish a trend, but if there is not a foreign downturn, there will be some serious agitation by domestic producers.

Steel prices continue to rise. The latest increase was for oil country seamless products. If demand remains strong, the mills can be expected to put through some 'catch-up' increases, particularly on sheet products.

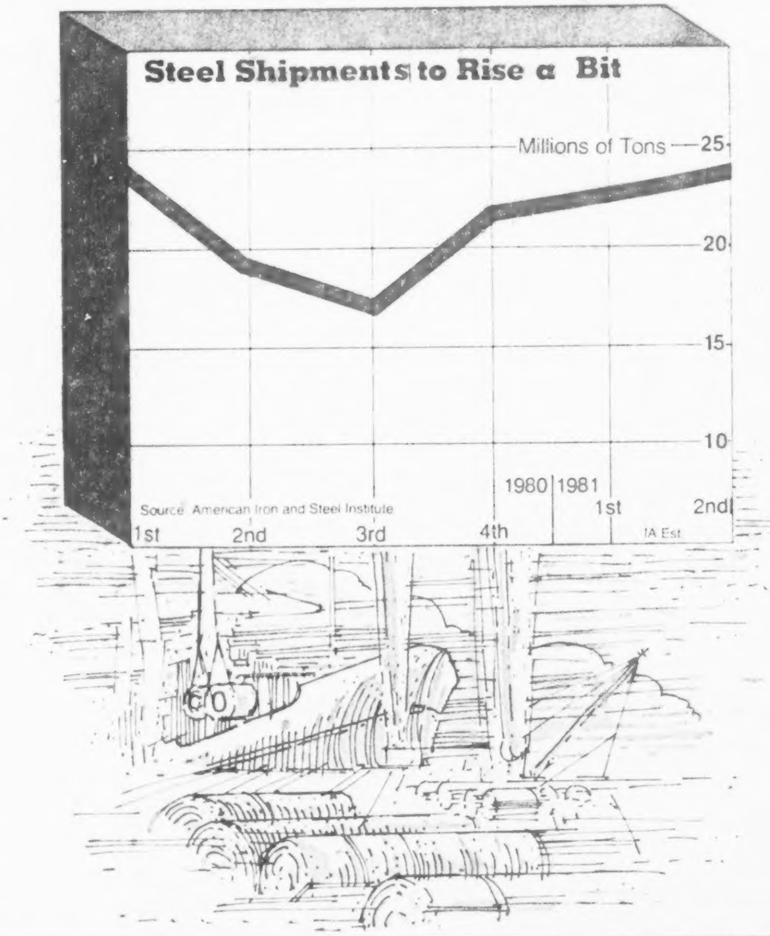
It's possible 1981 will be one of those rare times when business is good enough to permit price increases and a Republican Administration is avoiding any semblance of price control. The last time these conditions existed—in 1974—steel prices went up about 30 pct.

Having gotten safely through most of the first half, steel people are starting to think about the second half of 1981. Normally, there is a slowdown in the second half. Auto model changes and plant shutdowns reduce activity in the summer. Year-end taxes and holidays subtract from fourth quarter volume.

If volume holds up or improves, there could be some gaudy profit performances in the steel industry. In 1980, the industry operated at a little over 70 pct and most major mills made money. There were some inventory profits in the picture, but it is now accepted that the average break-even point is around 70 pct of capacity.

As of early March, the industry was operating over 85 pct of capacity. There is still caution about the outlook, and there is no tendency to relax the cost controls applied in 1980. People are waiting as long as possible before putting on blast furnaces and other major facilities.

In this setting, improved volume should give profits a big lift. Top executives are increasingly bullish about the outlook. Inland Steel Co. enjoyed "near-maximum" operations in the first quarter. Second quarter bookings "encourage us to hope that they too will permit strong operating rates," says F. G. Jaicks, chairman of Inland.



Steel Shipments to Rise a Bit

Source: American Iron and Steel Institute

Nonferrous Metals

The watchword for 1981 in the nonferrous metals business is "mirror-image." It reflects the hopes that this year's demand and consumption curves will be the reverse of 1980, when the slope was downward after a speculation-fed busy first quarter.

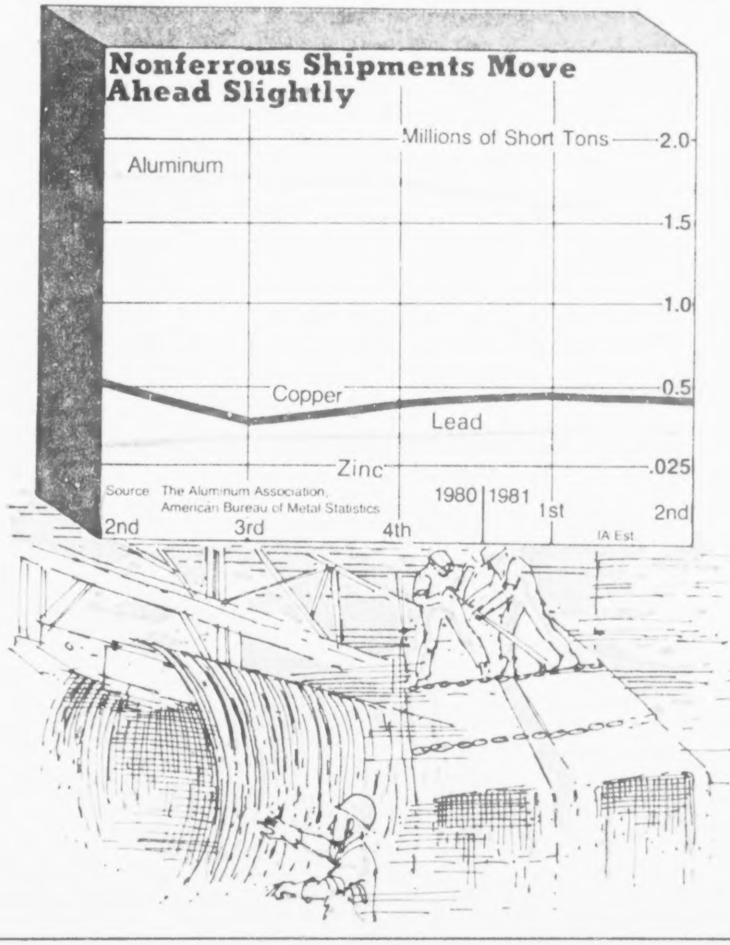
Leading nonferrous metals producers aren't projecting much more than gradual improvement in the second half of this year. The still-limping U.S. automotive industry and a poor construction market are giving them plenty of reason for caution.

Slackening activity in industrial economies overseas, particularly in Europe, also give cause for worry. Besides drying up export business for U.S. producers of aluminum and lead, this also could mean an increase in attractively-priced offerings in the domestic market.

Copper

Copper producers in 1981 have nowhere to go but up from an 1980 that dealt them a protracted strike and a high rate of imports that managed to offset domestic production losses. Domestic production started moving back toward normal levels in the latter months of 1980 while consumption was declining. Neither producers nor consumers were overburdened with inventory through the first quarter of this year. Slack demand and fairly steady operations in key copper-producing centers have combined to make the journey to higher ground slow and painful. The 83¢ to 85¢ a lb range for cathode copper in mid-March stood in sharp contrast to 99¢ to $1.05 a lb range prevailing a year earlier.

Copper producers are confident of better prices and shipping volume in the second half, but the edginess prevailing on the hedge markets as the first quarter drew to a close defies more specific projection. On one side there is the sluggish chew-up rate by the auto industry and other copper users while production runs at a fairly active clip here and abroad. On the other side is the thin inventory situation, which poses the possibility of another sharp runup in prices if demand picks up faster than anticipated or there is an unexpected interruption in production overseas.



Nonferrous Shipments Move Ahead Slightly

Source The Aluminum Association, American Bureau of Metal Statistics

Aluminum

The aluminum producers were still pouring new metal at a record-breaking clip as the new year got under way. Free world producers' stocks of primary metal rose 37.7 pct, or nearly 630,000 short tons last year, an amount roughly equal to U.S. primary ingot exports.

Industry sources said the export market dried up considerably in the latter part of the first quarter of 1981 and the first signs of discounting on primary metal items appeared shortly thereafter. Merchant discounts on the U.S. published prices were running over 10 pct by mid-March and London Metal Exchange prices were even lower.

One leading aluminum producer projects industry shipments for 1981 at 7.4 million tons for a 4.1 pct gain on 1980. This would fall a bit short of the peak 7.44 million tons shipped in 1979. With export demand down sharply from the million tons-plus of ingot and mill products exported last year, this suggests the company is anticipating a fair-sized recovery in domestic consumption in the latter part of 1981, a resurgence of export demand, or a combination of the two.

Lead

Lead prices began recovering from bargain basement levels during the early part of March, but they still were far below year-earlier levels. A busy export market, supported in large part by heavy Russian buying, pushed the lead price to record levels in the opening months of 1980. Since then, domestic producers have had to fall back on poor domestic consumption levels.

Lead producers' inventories still were climbing as March got under way, but approaching deadlines on key mine and smelter wage pacts may have made some consumers a bit edgy. Secondary material has not been freely available this year.

Zinc

Zinc shipments in the first quarter were running well below the year-earlier pace, but zinc producers' stocks entered March less than half what they were a year earlier. Supplies of zinc concentrates have tightened in recent months, but there was little sign, in the first quarter at least, that this was having much more than a sustaining effect on prices.

Machine Tools

Demand for United States-built machine tools and manufacturing systems—which turned decidedly soft in the last half of 1980 and stayed soft during the first quarter of 1981—will show little if any improvement in the quarter to come.

To be sure, help—in the form of the modified 10-5-3 accelerated depreciation proposal put forth by President Ronald Reagan recently—is on the way. And that plan, if approved by the Congress, should make a positive contribution to net new order rates in the second half of the year, when new orders are expected to break sharply upwards again.

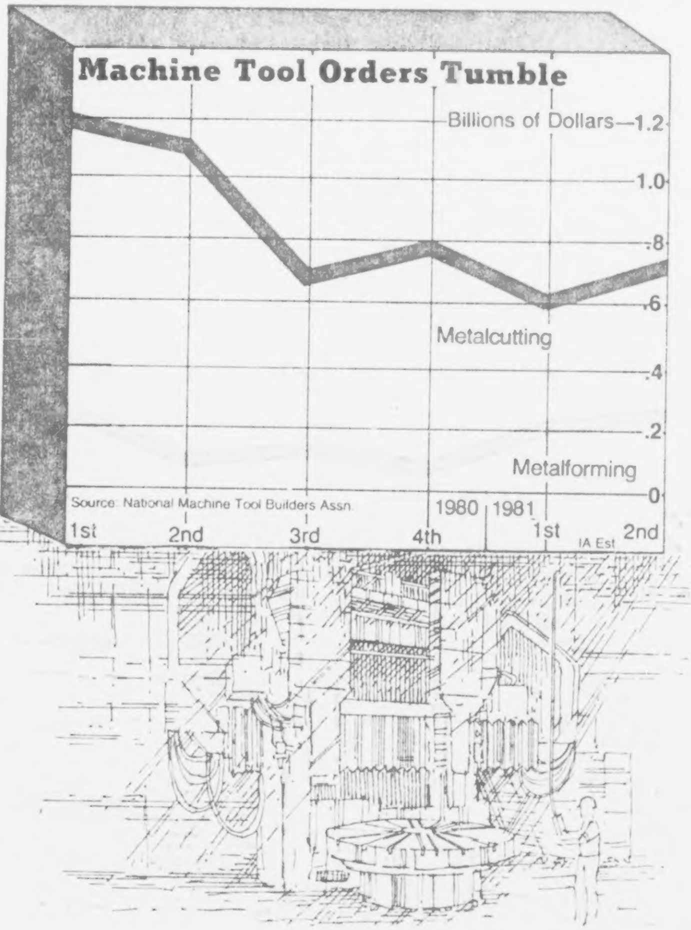
But in the meantime, U.S. machine tool buyers are taking a wait-and-see attitude. As a result, net new orders for the second quarter will probably continue to limp along some 25 to 40 pct off the pace set in the first half of 1980. And that would give the machine tool industry net new orders above $1 billion for the three-month period—but just barely.

"The problem," one Midwestern machine tool distributor told *Iron Age*, "is that anybody who can wait to buy a new machine tool is waiting. People want to see what happens with the Reagan Administration's economic recovery program.

"Small, standard machines, the off-the-shelf types readily available, are the hardest hit, because you're talking about financing them now, when money is tight, interest rates are high, and there are no real incentives to make new investments.

"The people who are buying machines right now are job shop-type people who need a machine to fill a specific contract they've just gotten. We're also seeing orders from the auto industry, which is in the midst of a major retooling program and doesn't have any real choice. But everybody else is sitting back, waiting to see what happens."

Still, most machine tool companies seem pleased with President Reagan's efforts to get the economy rolling again, and said the President's 10-5-3 program should stimulate a new round of heavy buying in the second half, if the plan is approved as is by the Congress.


Machine Tool Orders Tumble

Source: National Machine Tool Builders Assn.

The accelerated depreciation plan, long favored by industry, would permit manufacturers to write off buildings in 10 years; machinery and equipment in 5 years; and cars, light trucks, and research and development machinery and equipment in 3 years.

"Some of us hoped privately that President Reagan would push to make the program retroactive to the first of the year," one East Coast machine tool company official said. "But the President's plan is basically what we've been asking for, and if we get it, I, for one, will be satisfied."

Industry officials have also expressed considerable enthusiasm for the Reagan Administration's backing of Defense Department requests for expensive new projects and multi-year defense contracts. Such proposals, industry officials feel, would encourage the defense sector to make major new investments in new machine tools and manufacturing systems.

Although President Reagan's plan has generally received high marks from industry, one aspect of his economic recovery package—sharp cutbacks in funding for the Export-Import Bank—has rankled some. These officials note that overseas machine tool builders—especially the Japanese—continue to cut into U.S. export markets, in part because government support permits them to offer better financing packages.

The European machine tool market is an excellent case in point, these officials said. There, they said, Japanese imports are growing so fast that some Europeans are calling for protectionist barriers against "the yellow danger." And much of Japan's success in Europe, they said, has come at the expense of U.S. builders.

Still, the generally lackluster outlook for the second quarter must be put in its proper perspective. The U.S. machine tool industry is coming off three straight years of better-than-average sales and earnings, and most officials believe that 1981 will on balance be yet another good year for the industry. Net new orders, many believe, will be nudging the $5-billion mark at year's end. And demand, they say, will continue to be better-than-average for three or four years.

Furthermore, officials note, heavy capital spending in the machine tool industry during the past three years has significantly boosted U.S. capacity.

Automotive

"I don't have to tell you how tough the past two years have been to the auto industry," said one of the Big 3 presidents at a recent press conference. "It seems to be longer than two years ago when we were giving rebates on small cars and were sold out on large ones. It's easy to forget that the market shifted almost overnight."

The high interest rates and sluggish sales of autumn '80 prompted Chrysler to offer rebates in December; GM and Ford followed suit in February '81. The programs attracted buyers and cleared inventory, but they're as unpopular with auto executives as they're popular with consumers. "When you hype your market, you wonder what your incremental business is," commented one vice-president.

The customer incentive programs ended in the third week of March, and executives will be getting the answers soon: Will the market match their predictions of 10 million car sales in '81?

"The various cash-assistance programs now being offered in the industry have altered our projections of quarterly forecasts," said another vice-president. "We expect the first quarter to come in with seasonally adjusted sales moderately below the 10-million-a-year level, with some balancing of that high first-quarter rate in the second quarter." General expectation throughout the industry is that sales will drop off in April from the rebate-inflated levels of March and gradually pick up in May and June.

If Congress approves most of President Reagan's proposals and the prime interest rate slides down to 14 or 15 pct, the auto industry could see 10 million and 10.6 million annual sales rate in the third and fourth quarters, respectively. That will propel 1981 totals to 10 million—8.5 million by domestic and 1.5 million by foreign makers. That would be a considerable improvement over 1980's 9 million total industry sales, 2.4 million by foreign makers.

Such an attractive scenario is highly uncertain. A sales analyst for one automaker, whose forecasts have been habitually high, refused to predict '81 sales. "There are so many uncontrollable factors affecting the industry, from interest rates to the price of fuel to rebates, that it's difficult to give a forecast," he said. "Tell me what the cost of gas and the interest rates will be, and I'll tell you my forecast."

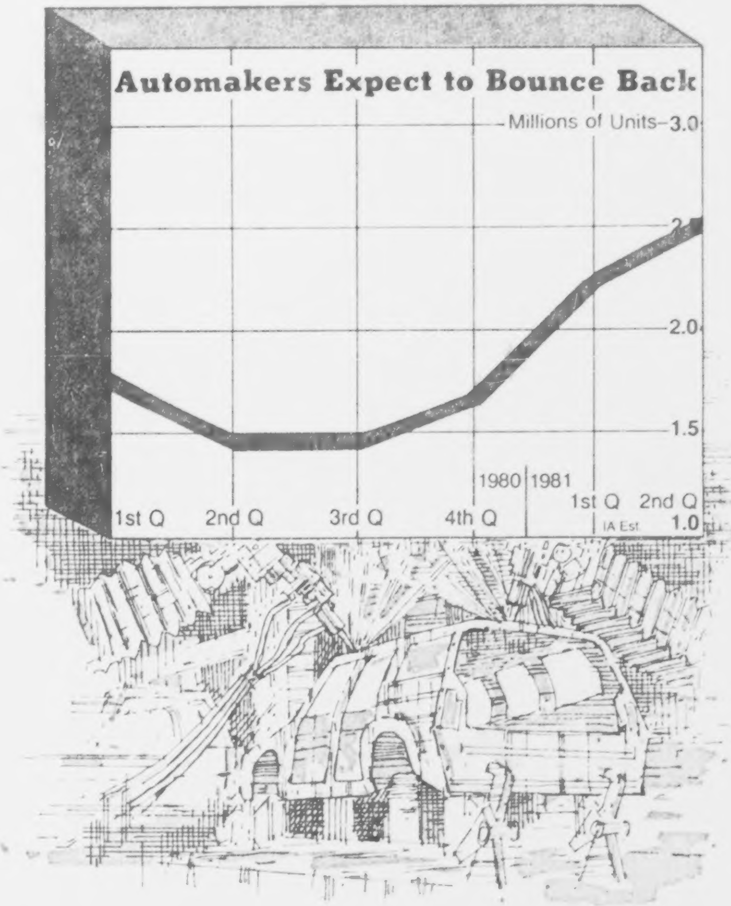
"We're living ten days at a time," said another auto executive.

Throughout the first quarter, the automakers were closing plants to reduce overstock and trimming production plans regularly. "600,000 people in the auto and supplier industries are laid off now," said the executive. The layoffs and production cutbacks will probably continue in the second quarter.

Still, the massive retooling needed to produce front-wheel drive, fuel-efficient cars in an increasing number of model lines will continue at unprecedented rates of capital investment: $80 billion by American makers in the 80s. Can the machine-tool business, for example, expect the large order backlogs to continue? "Damn right," one president responded with a certainty unusual in this uncertain period, "We're going to be pumping business."

Executives in the automotive industries are hoping that Congress soon will ratify the Reagan tax bill that would give businesses faster write-offs for investment in plant and equipment. Congressional leaders expect such a bill to be retroactive to mid-March.

Auto executives also are following with interest the Reagan Administration's discussions of Japanese imports, which declined in the first quarter from 1980 levels. Murray Weidenbaum, chairman of the Council of Economic Advisers, reportedly opposes even voluntary import restraints by the Japanese and is backed by Treasury Secretary Donald Regan and Budget Director David Stockman. Transportation Secretary Drew Lewis and Commerce Secretary Malcolm Baldrige, on the other hand, have publicly advocated import limits. The report of the administration's auto industry task force, due in March, should clarify the administration's position on that issue; so far the task force reportedly has drafted a list of changes in Federal clean air and safety regulations that could save the auto industry from $2 billion to $5 billion in capital costs during the next five years.



Metal Coatings

The producers of organic coating materials just came out of a year that treated them less than kindly. Shipments of all types of paints had slipped significantly, yet not unexpectedly.

As one spokesman for the paint industry described the current situation: "As go other industries, so goes the paint industry. When the automotive industry is down as it has been, we're down. When home building slows down, the paint industry suffers by reduced production of refrigerators, air conditioners, metal furniture and so on right down the line. The paint industry moves side by side with all the other industries that consume paint."

Having said that, and despite having had a 1980 that saw shipments of paint on the down side by about 5 pct, the paint industry as a whole fared better than many of the industries it serves. But that's not good enough and the hope is for the automotive and home building industries to begin seeing daylight and for all other paint-consuming industries to be perked up by the general economy.

In addition to the automotive and housing industries being in the doldrums, the coil coaters didn't help the paint industry with their record of performance during 1980. Their shipments were off from 1979 by a hefty 20+ pct. Coil-coated steel strip was off more than aluminum strip—24 pct compared to 12 pct, respectively.

Once again, the recession in the building industry affected coil-coated aluminum adversely. However, shipments of coil-coated aluminum for containers and packaging continued at a strong pace.

Coil coaters view this slump in shipments as simply a disruption in their overall track record. They still hold an enviable growth record for their North American shipments of coil-coated stock which has averaged more than 15 pct annually since the early '60s.

As for the coil coaters' future, no one seems to know what's in store for the next several months. But long term, there's general optimism that the industry will rebound strongly once the recession runs its course and the automotive and commercial and residential construction industries are back in full harness. This, they expect, once interest rates start to come down.

The latest figures from the National Coil Coaters Association show that its members now ship about 4 million tons of precoated products a year. More than a million tons are used in building products alone. Transportation is the second largest market with somewhat less than a million tons of coated products. One of the fastest growing applications in transportation is that of the weldable zinc-rich primers for passenger cars.

Still another coil-coating market that's strong and growing is that of aluminum cans, ends and tabs. That market now consumes more than 200,000 tons of precoated aluminum.

The turndown in shipments of coil-coated stock has not resulted in any automatic closing down of the coating lines. Lines that are not on actual production runs have in many cases been diverted to development work on new types of coatings, energy saving devices, quality control measures and the like in preparation for the future.

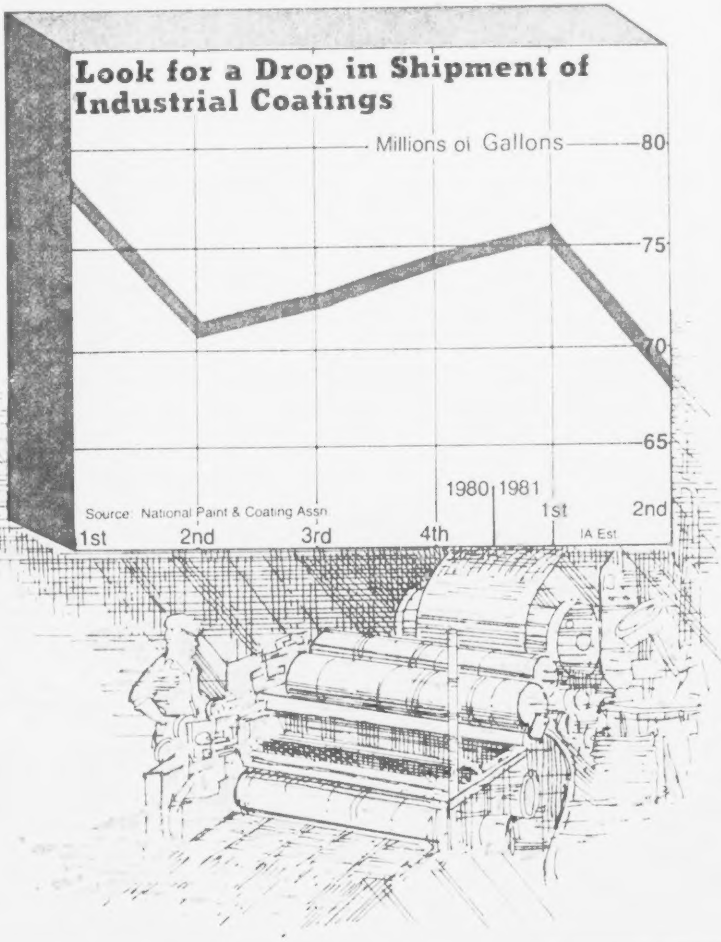
Others in the coatings industry have likewise taken advantage of the lull in orders and shipments to refurbish plant equipment, and to conform to environmental regulations.

Department of Commerce sources indicate that the slowdown in the economy was responsible for a decline of 4 pct in paint shipped during 1980. These figures, however, are for all paints, including house paints for the consumer market. Although total gallonage was down below the 1979 shipments, their total value was about 9 pct higher.

The DOC estimates that the total value of paints shipped in 1981 will reach over $10 billion and the volume of paints, lacquers and varnishes will exceed 1 billion gallons. The Department places the real growth in the paint industry, after inflation, at about 2 pct for 1981.

The industrial application of coatings is now estimated to account for about 30 pct of the paint industry's value of paint, lacquer and varnish shipments.

Rising costs for coating products are due to sharply increasing costs of feedstocks and raw materials.



Look for a Drop in Shipment of Industrial Coatings

Source: National Paint & Coating Assn.

Fluid Power

After a very poor second half last year by the past standards, fluid power has begun to recover a little in first quarter. In fact, some industry executives say that in their particular companies, there is something more than a "little" recovery taking place.

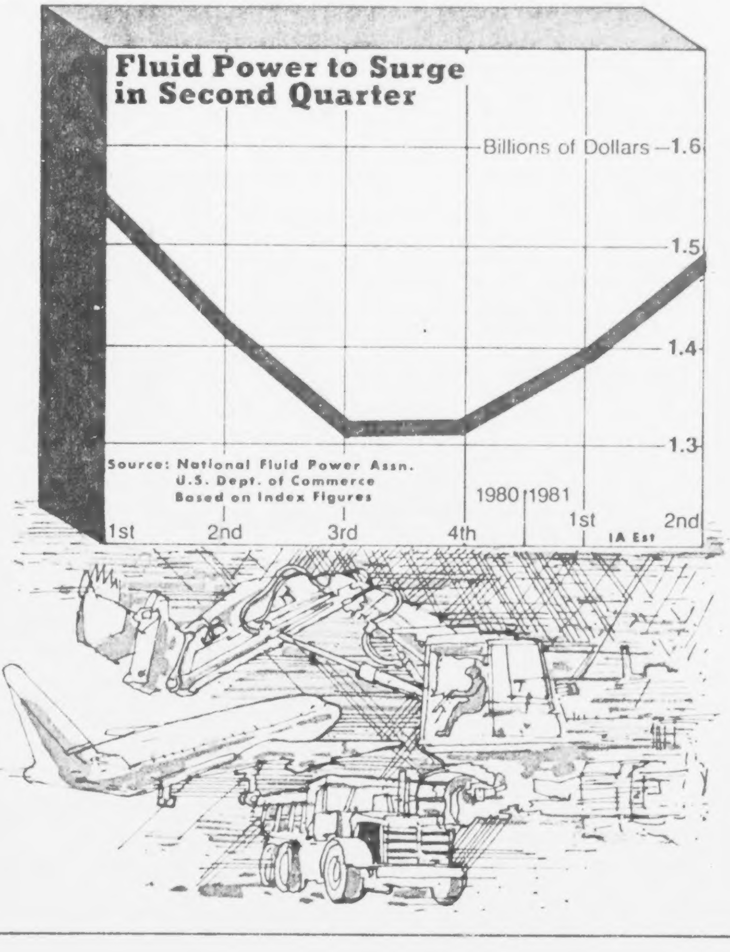
"There's literally been a crush of business in the past 10 days," one company officer says. "We've booked as much in that 10-day period of March as we booked in all of January-February." He had expected second quarter to be over first quarter. It now begins to appear that his first quarter forecast erred on the low side.

Other industry sources have been pointing to flashes of heavy business even earlier. A few, as early as the second week in January, were saying that the buying rate from their customers, both automotive and industrial, was running a little heavier than had been expected.

Despite this growing sense that the whole market could be moving up to higher ground, the average company continues without changing its forecast for the rest of the year. That is, they'll count on second quarter holding at about the first quarter level. Third quarter traditionally shows a seasonal drop, and that's expected to be the third quarter pattern again this year.

Fluid power, however, has such a wide market range and so many companies in its ranks, however, it's hard to get a clear picture of how rapidly the recovery is really taking place. In the past three months, the rate has been faster than a lot of people expected, or that could be justified by normal seasonal changes.

But it looks possible that the second quarter forecast adapted by most companies is erring on the low side. The first quarter performance of fluid power business indicators certainly suggests that. A real recovery hadn't been generally forecast until late third quarter or even well into fourth quarter. The next 60 days may prove that fluid power builders are going to have to start buying raw materials at a faster clip.


Fluid Power to Surge in Second Quarter

Source: National Fluid Power Assn. U.S. Dept. of Commerce Based on Index Figures

Questioned about that flat second quarter forecast, a veteran industry marketing executive argued: "I don't think many of us believe in the 'double-dip recession theory, any longer. Not a real double dip. But there could be a little slump ahead of us in second quarter. Enough to hold the industry volume at the first quarter level."

Yet he admitted his company has been finding new strength in markets that were dead for most of 1980. The auto-aftermarket, for example, is one that's been pointed at by several companies as the source of some new 1981 business. Nobody's been expecting any action during most of 1981 from the construction machinery industry.

So it's surprising that a few new orders are coming in from—of all places—construction machinery plants. It's not big, but it is a change. The argument is that a lot of customers reduced their inventories so much, they have to rebuild them at least somewhat. Whatever is doing it, fluid power is doing better right now than anybody expected it would this early in the year. But fluid power producers still seem reluctant to raise their production schedules to match the rise in the sales rate.

Fluid power is a cross-section industry. That is, its markets vary so widely that it is almost a cross-section of the entire U.S. economy. It covers the energy markets which were supposed to be strong this year, and are proving even stronger than was expected.

But it also covers the mobile equipment markets. These had a bad 1980 and, in most cases, weren't supposed to do much better in 1981. So the slight recovery in some of these markets, if it isn't anything to peg a big change in your 1981 forecast on, is still a plus factor that wasn't in the original 1981 script.

What may be even more significant than the mild recovery in some areas of the heavy mobile equipment market has been some gains in the passenger and light motor vehicle market. A few automakers predicted gains, but a lot of observers wrote this off as wishful thinking. In recent weeks, there's been more strength in automotive manufacturing.

In the summer months, fluid power like most supplier industries, has a seasonally slower period in July and August. Everybody is waiting for that to happen. Meantime, second quarter is proving better than expected.

Construction Equipment

The construction equipment manufacturers are looking ahead to a feast and a famine in their markets as the second quarter gets underway.

The big end of the market is where many equipment makers see the action occurring in the next three month span. Excluding the utility segment, the commercial construction market has been busy throughout much of the winter and promises to continue at a steady pace for the current period.

"We're seeing a lot of activity there," says one industry manager "and we expect to see more in the coming months."

He notes that many of the companies that handle the big building projects carried substantial backlogs at the beginning of the year and are still picking up new work.

Another industry executive whose firm relies heavily on the big end of the market agrees with that assessment and adds that the pace might quicken if President Reagan's business tax reductions are approved by the Congress. "There are a lot of companies that see those tax cuts as the key to their expansion plans.

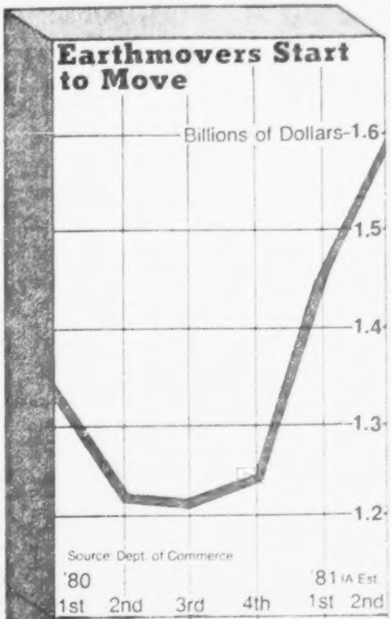
In the smaller equipment markets, the outlook remains bleak through the current quarter. High mortgage rates continue to choke off new home sales and high prime interest rates make building them equally unattractive.

Multi-family apartment building posted steady increases for the past half year but fell into the same swoon single family houses have been in since last summer. Single-family housing starts are expected to run below a 900,000 unit annual pace throughout the first quarter

Adding to the gloom are reports that permits for future housing construction are following the same downward trend in recent months. That provides little hope for a quick recovery.

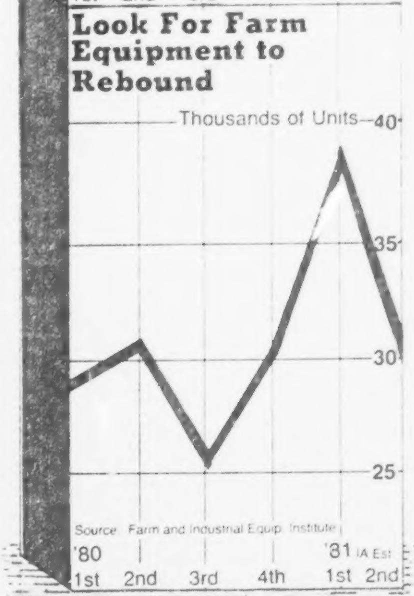
"I thought we could see a light at the end of the tunnel," says one industry spokesman, "then it went out last December and I haven't seen even a glimmer since then."

Another warns that even the industry sure grip on its inventory to sales ratios won't help if the housing market continues at such a lusterless pace. "About the only short term hope we have," he adds, "is that the Commerce department's figures will be so bad the government will be forced to take some action."



Earthmovers Start to Move

Source: Dept. of Commerce



Look For Farm Equipment to Rebound

Source: Farm and Industrial Equip. Institute

Farm Equipment

Signs of better times in the farm equipment industry are being seen with increased output at many manufacturing facilities. Tractor manufacturing has picked up in January with White Farm Equipment division, Deere & Company, International Harvester Co., Hesston Co., upping its farm machinery production. In March, White brought on stream its biggest plant, a tractor producing unit at Charles City, Ia., that had been idled since April of 1980.

Both Deere & Company and International Harvester had reported new records in farm equipment sales as early as December of 1980. Tractor retail sales in that quarter continued to fluctuate, sinking in December to a disastrous 6,843 units, the lowest figure in years.

In February, however I-H reported record retail farm machine sales, and Deere said 1st quarter sales were up 3 pct. William Hewett, Chairman of Deere & Co., noted "significantly higher" retail sales in February.

The low retail sales performance at the close of 1980 put a cap on 1981 forecasts at a fairly low level. But this industry has been feeling stronger for several months. The bounce back in retail tractor sales in the opening weeks of 1981 has already fueled stronger hopes. January sales bounced up about 16 pct over the previous month. February sales seasonally usually drop off, but the January retail sales spurt is already remarkable in its strength.

The up-and-down course of fourth quarter sales, as farmers were hit by high interest rates, caused a lot of concern. But there's no longer any doubt that farm machinery plants are raising their manufacturing rates in anticipation of strong sales in the second calendar quarter.

One farm equipment manufacturing officer put it: "We've got a lot of pipeline filling to do. So, while we don't expect to see the kind of recovery surge the industry saw in 1978, still we are going to have to manufacture at a higher rate than the monthly sales gain, to get more machines and tractors into the dealer pipeline."

In 1978, retail sales shot from 30,786 units in the first quarter to 44,800 units in the second, a 45 pct sales gain.

The current recovery is expected to be a lot more moderate, so Iron Age is expecting about 30,000 units in first quarter, rising to about 39,000 units in second quarter.

Material Handling Equipment

The market in the U.S. for Automatic Storage and Retrieval large (AS/R) systems as well as other material handling equipment such as industrial trucks and various conveyor devices is warming up if not heating up. "Automotive plant expansion and plant modernizing is keeping us pretty busy. I'd say bookings for the whole material handling business will be up this year a good 10 pct or even more," says one lift truck company.

"We've seen pretty steady growth for months now in inquiries," adds another. "A lot of our inquiries about trucks these days," he says, "are energy related. Years ago, that wasn't the case."

Many material handling companies report the same "new, permanent concern" with energy-efficiency today. "We tell them," says one AS/R project manager, "you can run our kind of equipment in the dark, without heat. That means a lot these days."

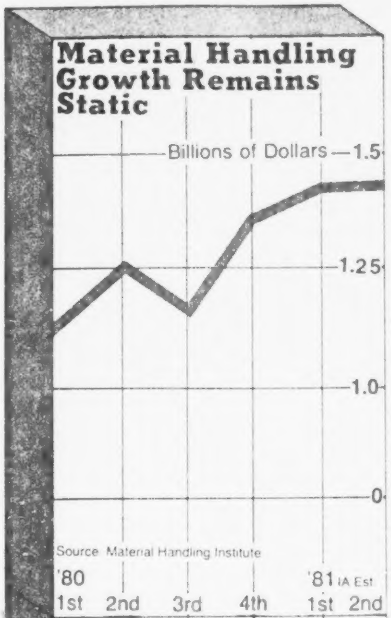
Besides automotive-related business, material handling companies are also reporting "downright hectic" days with mining customers. "That end of our business looks ready to really take off," says one conveyor belting company. "All the bulk people are expecting nothing less than a boom," he adds.

But, the biggest reason for the optimism in material handling is the same as it's always been: "this kind of equipment is paid for by its use faster than anything except machine tools," says an AS/R top manager. The business climate now is simply allowing our market to consider that fact more soberly than a year ago."

"Foreign competition was inevitable. It's been here in the truck segment for years. I can't say I welcome it, but I do say we're not going to see the U.S. AS/R market ever really go foreign in a big way."

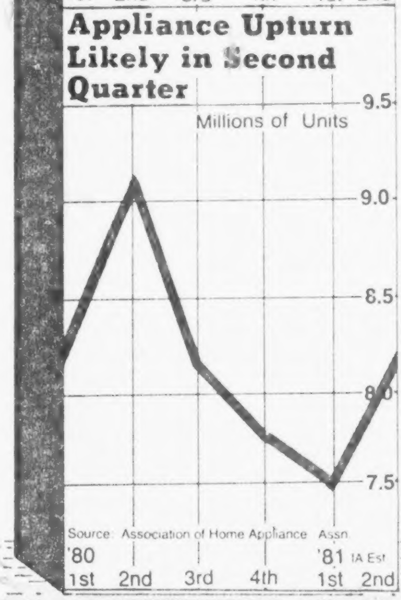
The few AS/R inroads made "recently by Europeans," here in the automotive industry "have us all doing research," says one American manufacturer.

By and large, the larger systems in the U.S. will remain U.S. made. "If your dealing with Saudi Arabia, well then of course you put in a service network and thrive and all that. But there's no service network over there in the first place. Over here, a foreign service network will have to compare, compete with us. That's different," says a U.S. AS/R company.



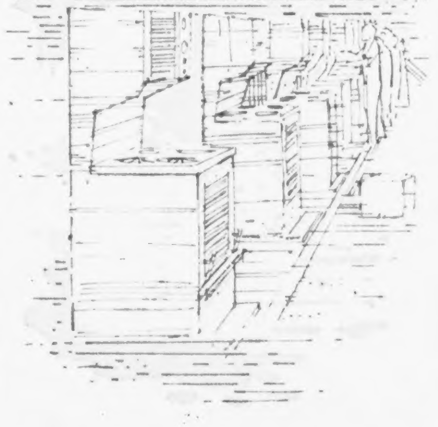
Material Handling Growth Remains Static

Source Material Handling Institute



Appliance Upturn Likely in Second Quarter

Source: Association of Home Appliance Assn.



Appliances

The strength in cold rolled sheet steel sales in the opening months of 1981, has at least part of its roots in the recovery in appliance manufacturing, however the appliance industry still moves into 1981 with a dismal forecast. Industry insiders even question the 3.5 pct gain predicted for manufacturers shipments of appliances this year by the Association of Home Appliance Manufacturers (AHAM).

Despite these widely expressed concerns over the 1981 outlook, the fact is that procurement by some key appliance makers has been advancing since last November-December.

AHAM acknowledged that January factory shipments are down 6.3 pct from the figure of a year ago January. Not many observers however have included the AHAM comment, to compare January 1981 with the year-ago January is to compare the industry's current performance with the highest shipments for that month in industry history.

What may be more critical is this: January factory appliance shipments shot 20 pct over the preceding month. In other years, it has been about 5 pct.

One company strategist pointed out: "Appliance retail sales last year fell somewhere less than 5 pct at their low point, and then began to recover. Factory shipments dropped a lot more, and averaged off 9 pct for the year." So the industry, from March of 1980, has been slicing into its field inventories. Whirlpool Corp., which raised its dividend last year even with a moderate sales decline to $2.2 billion, is talking about a 7 pct retail sales gain this year. This is about the AHA's estimate for an increase in factory shipments from appliance plants to distributors and retailers.

Despite their very moderate forecasts for 1981, appliance makers have been pushing their suppliers for faster delivery and have, in fact, been taking more materials than had been expected in first quarter. The stretch-out in first quarter deliveries from a number of mills was at least partly caused by an unexpectedly healthy manufacturing rate.

At a predicted 7.5 million units in first quarter, 1981, the *Iron Age* forecast is fairly conservative. The second quarter forecast, based on an estimated 15 pct climb in retail sales over first quarter levels, is also reasonably conservative. In two of the past five years, the second quarter gain has been substantially higher.

Mining Equipment

The outlook for mining equipment manufacturers hasn't been better in a decade. That's the consensus in the industry and the reasons are clear enough.

"We're going back to coal. We've been saying that for years, but now we're actually going to burn it," said one manufacturer.

"I've even heard that some people are predicting a return to coal-fired steam locomotives," said another.

Thus, interest in the whole array of equipment available for coal mining has increased. "We're in the new growth industry," said one equipment maker. "We should honor the Arabs for this, I suppose," he added.

How much growth? "In terms of dollar sales for a company like ours," he said, "I'd say we're headed for 15 pct plus, in real terms for several years—maybe a lot more."

"You'll see some of the big capital bays moving in more and more now," added another. "They can see the real money in coal mining already. It's going to be just like oil."

Other kinds of mining equipment are poised for a sharp increase in sales as well. Nuclear power is not a dirty word in Washington anymore and the uranium mining industry is also looking good to investors.

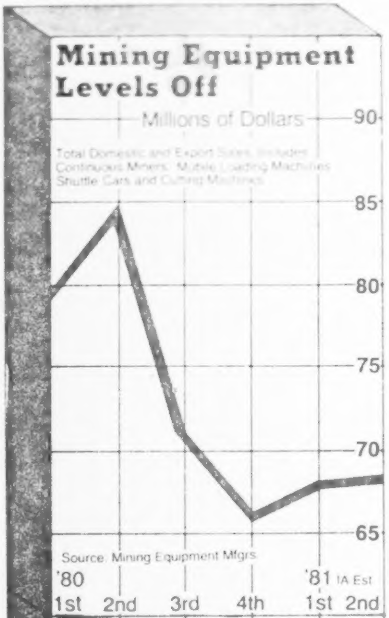
Iron ore mining equipment, however, is still a drawing board business in the U.S. "That kind of equipment doesn't sit on a shelf, let alone in a showroom," said an iron ore company executive.

"A big iron ore system follows, or precedes by not much, a big steel decision. You know what that means," he added. Simply put, U.S. iron ore mining is waiting on U.S. steel.

But, coal is king again and people in the coal mining equipment industry expect 1981 to be the year the industry finally took off. "If it goes like it could, it will be the growth industry of the decade," said one analyst.

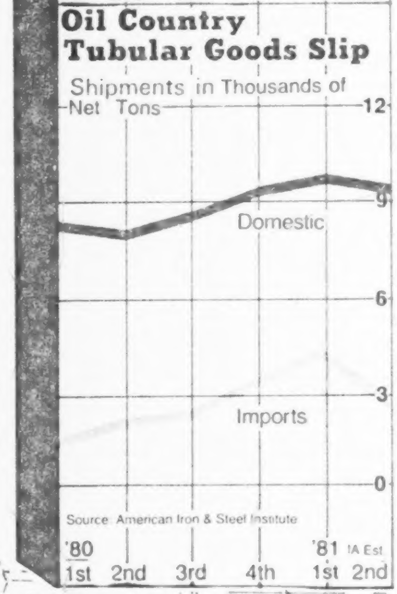
One other growth area in coal mining is going to be trucks, added the analyst. "A great deal of coal mining depends on trucks, not for delivery to market but in the mining operation, although some do move to market by truck." As mining activity expands, he said, "we'll see quite a demand for trucks as well as mining equipment."

The environmental movement, however, has not gone underground. "The difference now," says one industry analyst, is that they don't have any more friends in the government."



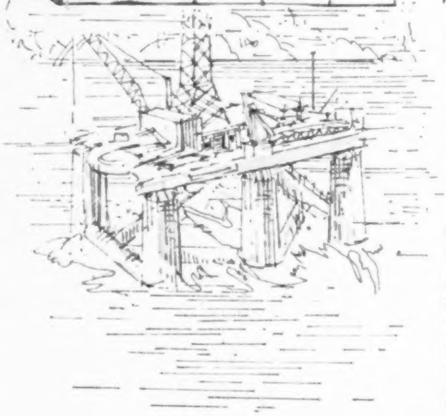
Mining Equipment Levels Off

Source: Mining Equipment Mfgrs.



Oil Country Tubular Goods Slip

Source: American Iron & Steel Institute



Oil Country Goods

Normally the strong tubular demand as was seen in the first quarter would be a tough act to follow, but say industry observers, the second quarter promises to be just as "good for the pipe peddlers."

In fact, practically all the major tubing makers were booked out months in advance of the second quarter.

The main reason, of course, is the vigorous rotary rig activity now taking place in the U.S. Over 151 rigs have been added to the U.S. fleet since the start of the first quarter, bringing the total count to 3,568 rigs on March 2.

So far there are no signs of an end to this unprecedented drilling pace. In fact, Houston-based Hughes Tool Co., which initially forecasted 3,200 new rigs in 1981, has since revised its forecast upwards to 3,400 rigs. Hughes made the adjustment to take into account the recent OPEC crude oil price hikes, the Reagan Administration's decontrol of oil prices, and the continuing migration of rigs from Canada to the U.S.

Besides the rig count, another good barometer of drilling efforts is the amount of footage drilled. In the first quarter, it was estimated that energy firms drilled 77.1 million ft.

To say the least, the feverish exploration activity is making tubing manufacturers quite happy, considering that 1,100 tons to 1,300 tons of oil country tubular goods are needed for each rig.

Likewise, it's also causing some worries, because domestic pipe makers don't have the capacity to meet the "intense" demand. As a result, some tubular products, particularly high-strength alloy pipes and small outside diameter pipes, are now in critical supply.

There may be some let up in the demand by the third quarter, but many are doubtful that that will occur.

"The rise in the rig count has caused demand to increase more than we ever saw it before," remarked a president of a Houston-based pipe distribution firm.

In the first quarter, many U.S. oil companies are continuing to do business with foreign tubing manufacturers. But now their efforts have since intensified, and they are trying to deal with as many overseas tubing firms as they can. Evidence of this is the fact that tubular imports in January were a record 162,134 net tons.

Forgings

Although by no means universally felt, the prevailing mood of the forging industry is one of very cautious optimism.

Manufacturers of forgings are having a hard time picking out a trend because new orders are apt to appear suddenly.

Said one industry official, "The best word to describe the market is spongy. Even when the market looks firm, all you have to do is poke it and the soft spots appear."

"We are beginning to see what we think is a period of gradual growth. But so far, it is nothing to write home about," explained another.

Backing up the optimism, figures from the Forging Industry Association indicate that January orders are up 6 pct and shipments up 17 pct from December's totals.

Oil field products remain very strong. In fact, several forging companies which have been badly hurt by declines in automobile production are beginning to look at opportunities in the petroleum industry.

Aerospace is also strong. "We expect another surge in the industry in a year or two," said one industry official. "In addition, if the B-1 aircraft program is revived, we are really going to be scrambling."

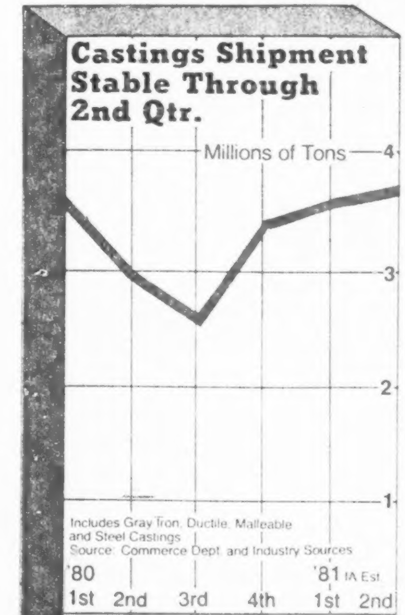
Some forgers see signs that the automotive industry is stirring ever so slightly and the truck industry is picking up. High interest rates continue to pose major headaches, both for the forger and his customers. After five years of significant growth, capital expansion programs have dropped off in recent months. Even funding for raw materials is a problem.

"Because of the high interest rates, customers want you to run a warehouse for them," said one industry spokesman.

"And as long as money stays as high as it is, this will continue to happen. People call you and want something next week or you get products made and then they want to cancel the order."

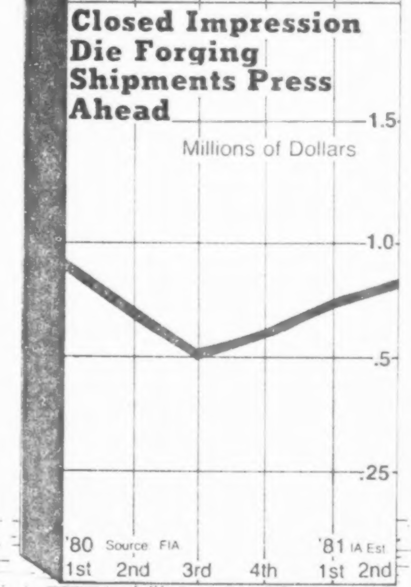
A number of forging company officials are cautiously optimistic about the next few months, but as long as interest rates remain high and orders appear so quickly, it is difficult to predict how strong the market will be even several months into the future.

"I think that by mid-year, the prime will be down and we will have a better feel for the market and how the rest of the year will go," predicted one spokesman.



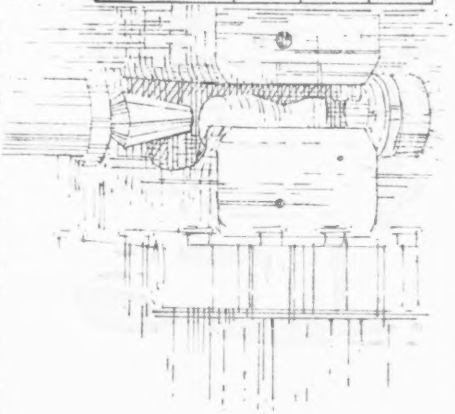
Castings Shipment Stable Through 2nd Qtr.

Includes Gray Iron, Ductile, Malleable and Steel Castings
Source: Commerce Dept. and Industry Sources



Closed Impression Die Forging Shipments Press Ahead

Source: FIA



Castings

"When you see a good thing beginning to take place, you don't like to talk about it because you might put a hex back on it," the chief officer of a large jobbing foundry says. His attitude probably reflects a very general feeling in the foundry industry that—despite high interest rates—the first quarter of 1981 has turned out a little better than anybody had any reason to expect.

For iron and steel foundries, the hardest hit areas appeared to be in the Midwest, particularly in the third quarter of 1980.

The drop then was almost unprecedented, and appeared to reflect a general cutback in manufacturing levels that hit the manufacturing economy in second quarter.

The foundries knew they were in trouble then. They didn't know how bad the trouble was going to be until they got into third quarter, however. That was the bad news.

The good news was that after an uncertain fourth quarter where sales varied from month-to-month, the industry finally finished the quarter at a reasonably good pace. At least, a pace that was a lot better than the bottom period it reached in the third quarter.

Most of their 1981 forecasts were written in the October-November period of 1981. Things were bad then, and it still wasn't clear that conditions were getting much better. But in December things did get better, and it now looks as if, barring some individual exceptions, that the strength witnessed in latter months of 1980, continued in January and again through February.

Foundries had come into the year with modest production schedules and low raw material inventories. By the end of January, they were having to go back into the market place and get additional raw material, a move that triggered further increases in scrap prices and ran hand-on into a wave of steel mill buying.

The steel mills were having the same problems with an overly-moderate first quarter forecast that the foundry industry was having.

The second quarter is still forecast at little more than first quarter tonnages shipped. A growing number of foundries are now beginning to admit that, like the first quarter forecast, there's a good chance that the second quarter forecast will be a little on the low side.

QUARTERLY FORECAST

Aircraft

Commercial aircraft orders are casting an extremely long, dark shadow on anticipated production for 1982 and 1983.

The Big 4 airliner builders—Boeing, Lockheed, McDonnell Douglas, and Airbus Industrie—booked only 10 planes during February. This followed a January booking of 27 planes, of which 15 were a single order for Boeing's new 767 wide-body.

Industrywide bookings for the first quarter of 1980 totalled 132 commercial planes.

The commercial order environment shows few bright signs. Domestic airline fares are up, traffic is down, fuel costs continue to escalate, and money is tight and expensive. Foreign aircraft orders, which supported the market for much of last year, face many of these same problems.

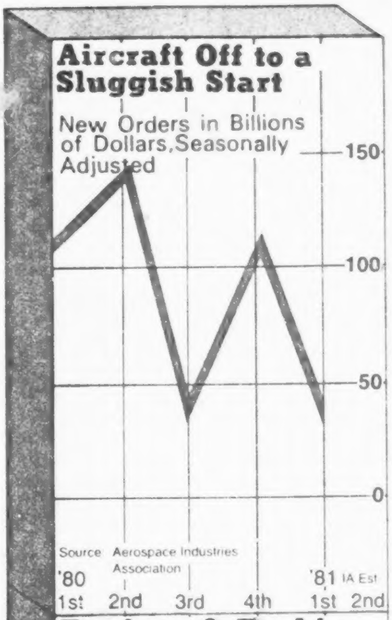
Boeing continues to stick by its market projections that call for a continuing demand for jet transports during the next ten years. The industry king-pin says the airlines will need some $130 billion (in constant 1981 dollars) in new planes.

Meanwhile, the market for used aircraft is sagging badly. Many airlines had counted on cashing in their older planes to help finance the purchase of new, fuel-efficient models.

The most favorable sign for the future was symbolized by American Airlines' January purchase from Boeing of 15 new generation Model 757s and the earlier purchase by Delta of 60 757s. These orders go a long way towards assuring the ultimate profitability of the 757, which had suffered a long sales drought following its initial announcement. A similar burst of orders earlier for the new widebody Model 767 means that Boeing's massive development investment in both new planes very probably will pay off.

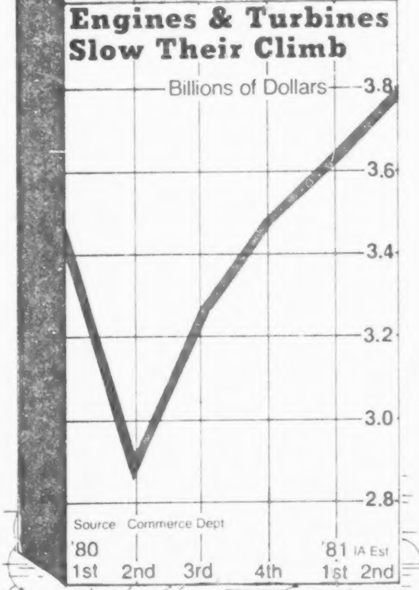
Increased military business seems assured. Commitments for a major bomber program will bring participation to a broad list of companies.

At the end of 1980, Boeing's $20 billion order backlog was 84 pct commercial (including local and foreign government) and 16 pct U.S. government, mostly military. McDonnell Douglas' $8.8 billion backlog was 34 pct commercial and 66 pct government business. Lockheed's backlog was $6.2 billion. U.S. Government orders, principally military, amounted to 53 pct; foreign, including government and civilian, 35 pct; and U.S. commercial sales, 12 pct.



Aircraft Off to a Sluggish Start

Source Aerospace Industries Association



Engines & Turbines Slow Their Climb

Source Commerce Dept

Engines & Turbines

The unfortunate combination of forces that pushed engine and turbine orders into the dumps have, if anything, gotten worse. For the first half of 1981, the outlook is not encouraging.

"The first quarter was even weaker than we expected," remarked one diesel manufacturing executive.

And the diesels are not alone. The woes of the auto industry are known all too well. What's more, the small gasoline engine manufacturers are looking for substantial declines in unit shipments for the first half of the year.

The big turbine generator sets, also included by the Commerce Department in SIC 351, look as bas as ever too.

Inflation actually is the only reason the dollar figure for new orders will show improvement in the first half. Unit shipments, most manufacturers concede, will fall off anywhere from five to 15 pct.

One of the country's largest builders of small gasoline engines expects its unit sales for the first half to be down 25 pct.

The company's president said the expected seasonal recovery in demand for engines simply did not occur. Inflation and high interest rates, coupled with an uncertain economic outlook, he said, have made domestic retailers cautious. That caution makes equipment manufacturers reluctant to build large inventories in anticipation of future orders, he adds.

Big diesel manufacturers are in the same boat. Equipment builders' inventories of diesels have held remarkably low for the past year and the industry has been waiting eagerly for rebuilding to occur. It hasn't.

"Producers are building," says one diesel company's economist, "but orders still are very slow.

"The uncertainties are high," he continues, "We don't know what we're going to get on the fiscal side from Washington.

"We expect zero growth in GNP in the second quarter, a total economic pause. But things should pick up in the third," he adds.

Turbine generator sets remain depressed. Shipments in 1980 continued falling in a decline that has been constant since 1977. Over the past three years, shipments have fallen 38 pct.

"Nothing has changed," says an industry economist. "We are far too overbuilt and we can't possibly approach capacity for another four or five years."

Computers

As the computer industry enters the second quarter industry shipments for 1981 are expected to reach $32.8 billion, a 26.2 pct increase over the 1980 level.

Some companies did see some softening in the market, particularly in the second half of 1980, but backlogs were strong enough to keep the industry busy. And exports were up 36.4 pct over 1979 to an estimated $7.5 billion. The past year was the fourth consecutive year of increasing exports. This trend will be broken in 1981. The European and Japanese economies are expected to turn downward, and with the downturn, U.S. computer exports will also drop.

Computers continue to ride through economic downturns comfortably because they are perceived as a productivity tool, as one step that can be taken to become more efficient and therefore counteract recessionary trends. Also the price/performance history of computer technology makes it a good buy, in almost any times.

Prices for the computer industry got a little out of hand in 1979 into mid-1980 because of semiconductor shortages. This situation stabilized in late 1980.

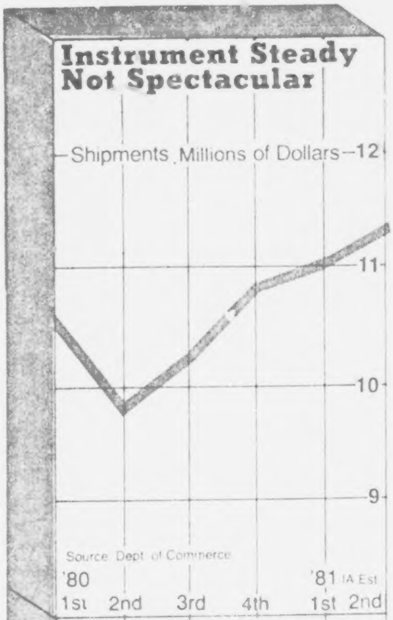
The high level of demand for almost all types of computers should continue strong for several more years. 1982 is expected to be a very good year after the economy picks up in the last half of 1981.

The computer industry looks favorably on the Reagan Administration, says one source, although he cautions, it is still the honeymoon period.

Certainly, if defense spending is increased, that will have a positive impact on computer sales. Business tax credits should further stimulate investment in automation equipment. Sales to state, local and even Federal government may show a temporary dip—even then the long-term advantages of computers should keep sales to this sector healthy.

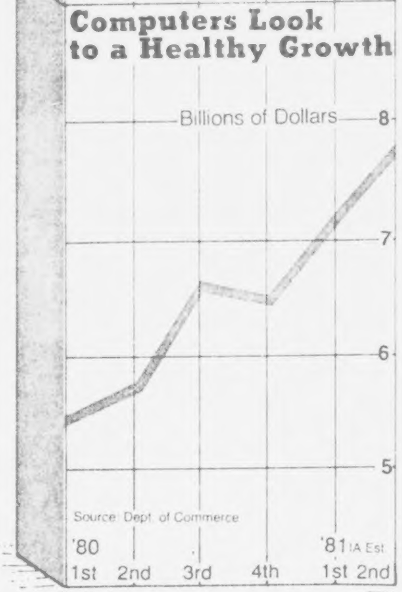
The market looks strong for almost all types of computers. The bright new stars on the scene are personal computers and office automation equipment. Meanwhile, the more traditional minicomputer and mainframe manufacturers are enjoying steady growth as well.

Affecting almost all market segments are new methods of marketing. The retail store approach has been so successful for personal computers, others started using the approach.



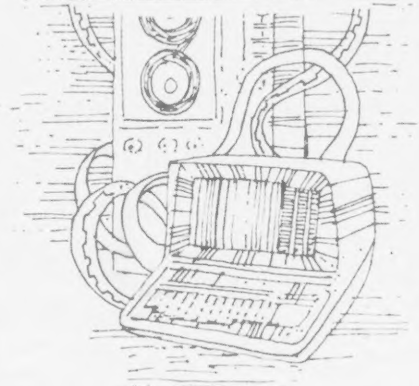
Instrument Steady Not Spectacular

Source: Dept. of Commerce



Computers Look to a Healthy Growth

Source: Dept. of Commerce



Instruments & Controls

The instrumentation industries are expected to grow at about a rate of 16 pct in 1981 over 1980. In constant dollars, growth for the next five years should be about 9 pct a year.

Whether an instrumentation company is doing well or not seems to depend on what it is making and to whom it sells. Some segments are strong, some are not. The overall picture is healthy, however.

Driving increased sales of measuring and control instruments is the overwhelming need for productivity. Although the term is overworked, the concept is real. And it translates directly into more control in every metalworking industry. Control instrumentation is getting more products out the door, and putting more quality into those products.

The quest for productivity is convincing management in many companies to retrofit present equipment with sophisticated controls, even if the general economy is keeping them from buying new equipment. So, manufacturers of control equipment which can be incorporated into an existing line are seeing good results.

Energy management has become a very strong market driver also. Many metalworking companies whose processes involve high temperature, have already installed instrumentation to minimize the fuel expended. Broader systems are coming on stream in many plants to conserve energy.

The new Administration in Washington prompts cautious optimism on the part of control makers. If the economy improves, everyone will do better, says one source.

If defense spending increases, as is expected, the instrumentation industries will benefit. If capital spending gets a boost with tax incentives, that will surely help. All that new capital equipment has controls on it or associated with it, says one manufacturer.

In every area, trends in instrumentation follow the trends in digital technology, and in electronic technology. Controls are getting cheaper in the face of the growing demand for control. More OEMs and end users can afford to incorporate them in their equipment.

Controls are getting easier to use because of the advances in electronics. Again, this makes them feasible in more applications and for a broader segment of the workforce. And controls are getting smaller so they can fit just about anywhere.

Fasteners

After what was perhaps the deepest recession since the 1930s for U.S. mechanical fastener makers, the upturn has begun.

"First quarter sales were fair and steady. In fact, compared to 1980, they were terrific," says an industry observer.

One major cause of the industry's upward swing is clearly the general improvement in the business climate. But another is the way inventories were handled during the last recession. "They (fastener customers) let stocks disappear. Now they're buying again to replenish," says one Ohio company.

First quarter sales were up, but how much isn't clear yet. "The fact that they were up," says the industry observer," is the point. We just went through the worst recession in most of our memories."

Others in the industry note that business expectations for the second quarter and indeed for the next several years have to do with what the Department of Defense will want. "If only half, only a third of what I've read is true, we're going to be up to our ears in business for years," says one fastener maker.

Meanwhile, non-defense manufacturing is picking up and fastener companies expect a steady increase in business throughout the year.

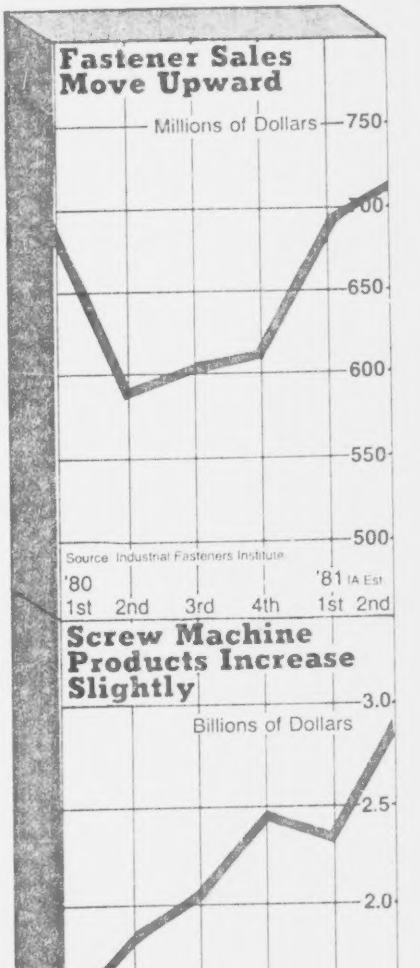
What about imports? "It's still a problem, yes. But there's no way standard foreign companies can supply Defense and domestic needs. So, we may see some capacity problems, particularly in standards as the year goes along," he adds.

Another point of view about imports for the rest of 1981 and beyond comes from a long-time industry analyst: "The standard and mechanical fastener industry has been similar to the shoe industry for years. First here. Then next year there. But I think labor rates are going to catch up to the fastener industry in the Far East. Then it will be competition in terms of quality and service. That's when the U.S. makers will win out in the U.S. market."

About that observation, an American fastener maker says: "not this year, but maybe some day."

As for the rest of '81: "It looks like steady good growth for many months out."

But the main source of optimism in the U.S. mechanical fastener industry is the anticipated increases in Defense spending. "We're expecting quite a military surge," says one executive.


Fastener Sales Move Upward

Source: Industrial Fasteners Institute

Screw Machine Products Increase Slightly

Source: Dept. of Commerce

Screw Machine Products

Screw machine products experienced a sluggish first quarter, but some unexpected strengths in orders indicate that better times may lie around the corner.

Approximately one-quarter of industry sales depend upon the automotive sector and industry officials are unhappy about the automakers' slow recovery.

"Car sales appear to be picking up a bit," said one spokesman, "but what will happen when the industry stops giving out rebates?"

The industry also is hurt by slow sales in appliances, farm machinery, off-highway equipment and the plumbing industry. Geographically, West Coast and the Southwest manufacturers appear to have been lightly hit by the recession, while companies in the Midwest continue to suffer.

On the positive side, several screw machine products firms have reported sales increases in the last weeks of February and the beginning of March.

A West Coast firm picked up new business in December and sales have remained strong through March. However, California appears to be a special case.

"From people I talked to in meetings in Florida and Cleveland I found other parts of the country hit much harder than California; maybe it is because of their dependence on the automotive industry," explained the manufacturer.

Again, however, he couldn't put his finger on exactly why business had improved in the first quarter.

"We are a job shop and work for everyone from toy manufacturers to missile builders," he explained. "We are so diversified that it is difficult to track down where everything is going."

High interest rates continue to indirectly hurt screw machine products manufacturers. Customers can't afford capital equipment or raw materials so the industry sales suffer.

With customers waiting until the last minute, it becomes difficult to look into the future. Despite a cloudy crystal ball, there are signs that the industry is picking up. A number of companies have reported spurts in orders in the first quarter. Although at this time it is unclear if these new orders signal the start of an upward business spiral.

"The market is very unstable at this time, making it very difficult to discern any patterns," commented one official.

Welding

The goal of the welding industry seems to be to get back to that record level set during the first quarter of 1980. Obviously, the sudden drop in activity during the spring of 1980 was a shocker. Since then, the sales curve has been moving upward, but very slowly.

Despite this general comment on welding trends, it must be added that not all manufacturers agree. Some claim that 1980 was a real banner year in sales. Much of this optimism can be traced to the welding industry's cushion—maintenance and repair work. When production slows down, maintenance and repair welding will pick up.

Of those industries which are heavily dependent on welding, both powerplant construction and offshore rig fabrication are in boom periods. This year should also be a very good one in pipeline construction.

There is even hope that any increase in defense spending will also spur sales in welding equipment and consumables.

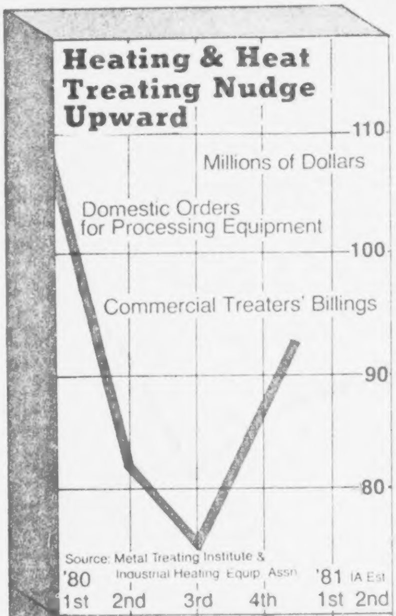
Activity in machine tools and rail cars won't hurt, either. Of course, the slump in the auto industry has been particularly harmful to resistance welding, though arc welding has suffered as well. As the cars decrease in size, less welding will be performed on the production line.

Performance during the fourth quarter of 1980 and the first quarter of 1981 surprised a lot of people in the welding industry. Says one executive: "They both turned out better than we thought they would." This same executive also predicts sales to keep on moving slightly upward during the second quarter as well.

According to the statistical index compiled by the National Welding Supply Association, Philadelphia, October 1980 was a record month in distributor sales. The index dipped sharply in November, but has shown steady improvements in December and in January.

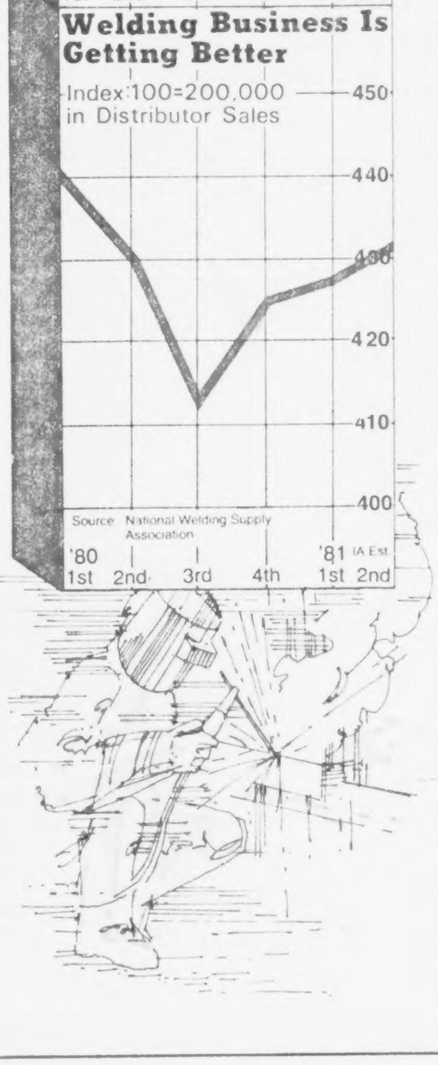
All welding industry leaders are looking ahead to the second quarter; traditionally, this is the strongest quarter of the year for welding.

What about the newcomer to the welding industry—the robot? What effect is it having on the welding economy? To date, robot sales have not been high enough to have much effect at all on total welding sales. If metalworking's interest in welding robots continues to mount, however, the robot may be a factor one of these days.



Heating & Heat Treating Nudge Upward

Source: Metal Treating Institute & Industrial Heating Equip. Assn



Welding Business Is Getting Better

Source: National Welding Supply Association

Heat Treatment

Producers of industrial heating equipment are having their ups and downs. However, the ups and downs are so slight that they're virtually in a hold pattern.

Domestic orders for industrial heating equipment slipped by 7 pct in 1980 as compared to 1979. Sales of industrial furnaces and ovens went down 10 pct, but orders for atmosphere generating equipment, industrial combustion equipment and replacement parts increased by 2 pct during the same period.

It's too early to say that the industry as a whole is optimistic but it is hopeful of a turnaround starting about the third quarter of 1981. Of those companies surveyed, more than half indicated that they expected increased orders for the year. They placed the median increase at about 12 pct.

Many companies (more than 21 pct) didn't expect any change over 1980 and almost as many expect slippage in domestic orders for the remainder of the year.

The picture among the commercial heat treaters is very similar to that of the equipment producers. Slippage in billings by the heat treaters during 1980 was slight (only 0.9 pct), compared to 1979 and the pattern at present is on hold.

Major differences in billings stem from the industries that the heat treaters serve. Heat treaters in the Michigan region, for example, showed a drop for 1980 of more than 20 pct because of the automotive industry being in the doldrums. The remainder of the North Central region also showed a sizable drop (almost 9 pct). However, five of the eight regions covered by the Metal Treating Institute showed gains.

The outlook among heat treaters for the remainder of 1981 is about as much of a mixed bag as the geographical areas they're in and the customers they serve. As one heat treater in the North Central region explained, "We've been in a depressed economy through 1980 and the leading indicators point to 'no change' in 1981."

Another heat treater from the West Coast region put it this way: "We're expecting business to recoup some of the losses of 1980. Predicting the outlook for the remainder of 1981 may be a little less sticky under the new Administration, but it's still just a guess." Nevertheless, this heat treater has plans for plant expansion this year.

QUARTERLY FORECAST

Rail Cars

Last year America's freight car builders received orders for just over 46,000 cars.

The fact that they shipped about 87,000 indicates just what was going on. They were nibbling away at their backlog in order to keep busy.

As a result that backlog, in the third month of '81, equals 48,000 cars, the lowest since April, 1978. And that backlog is not likely to get bigger, but smaller as the year progresses.

For, as a spokesman for the car builders indicates, the industry will probably receive orders for only 40,000 to 50,000 cars this year.

As the chart indicates, last year orders averaged about 12,000 per quarter. For the first quarter of this year they will be lucky if they reach 6,000.

It's a slow time for the builders. And they are not inclined to be optimistic unless there's a quick turnaround in the economy. The builders feel they will have a better perspective when the first half is over. And they hope a pickup will begin toward the end of the year.

It would be hard for 1981 to be as bad as 1980 in terms of orders. Last year orders for new and rebuilt freight cars totaled just over 46,000 compared with almost 120,000 in 1979. The average backlog in '80 was 80,000 cars, contrasted with the 120,000 the year before.

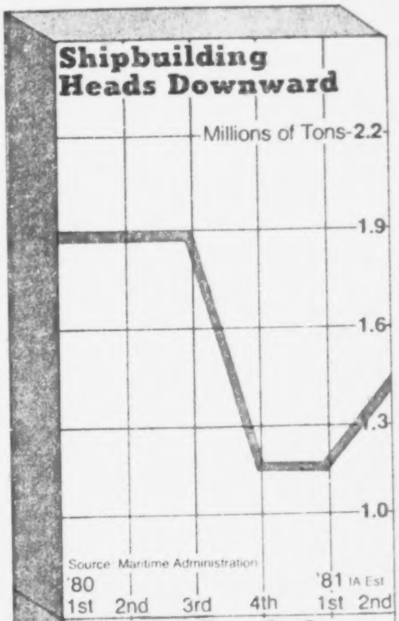
All types of freight cars are subject to the slump. Of industry source indicates that of the 2,147 cars ordered in January they broke down almost evenly—one-third were gondolas, one-third were covered hoppers, and one-third were tank cars.

However, in general terms, it is the covered hoppers that are the most in demand. It's estimated they make up about 50 pct of the current backlog. One prime reason for their popularity is the need for covered cars to transport grain for export overseas.

One market factor the car builders had counted on heavily for the 1980s hasn't materialized as yet probably due to the recession and confusion over a U.S. energy program.

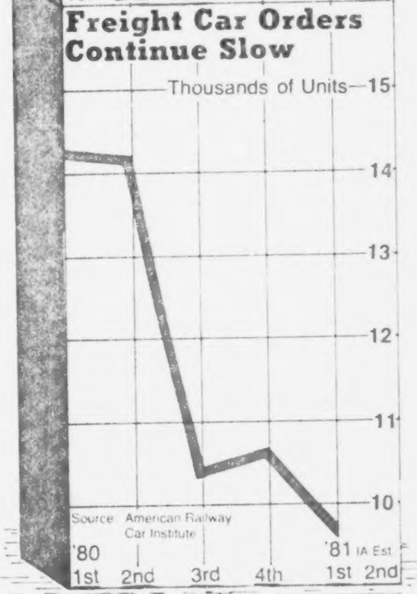
That prospect was the building of more new coal cars to handle the boost in that commodity's popularity as a fuel. That hasn't broken loose yet. But railroad freight hauling lists still place coal transport as No. 1.

While discouraged about present conditions, the carbuilders point out they are always one of the last industries to bounce back after a recession.



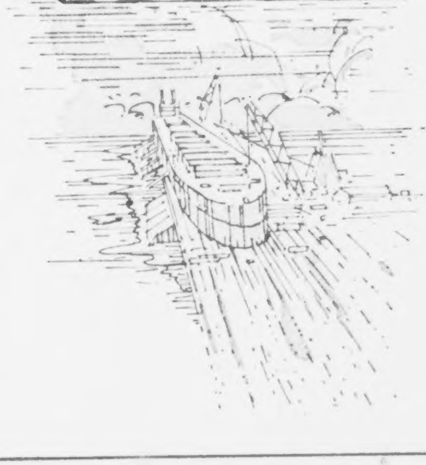
Shipbuilding Heads Downward

Source Maritime Administration



Freight Car Orders Continue Slow

Source American Railway Car Institute



Shipbuilding

Things are rough for the shipbuilders. With big navy work several years off and commercial ship orders coming in at a trickle, yards are doing everything they can to keep busy and hold layoffs down.

Nonetheless, it's estimated another 11,000 production workers will lose their jobs this year and during the next three years, before things pick up, about another 12,000 will be furloughed.

Thus, while the headlines proclaim "Reagan plans to expand navy by a third" and "Reagan's aim—a navy that tops Soviets," there are other headlines reading "Sun Ship to turn to repairs in hopes of staying afloat and "bankrupt Seatrain Lines, Inc. agrees to reorganize."

Commenting on plans to revitalize the Navy a spokesman for the shipbuilders said, "The expanded shipbuilding program proposed by the present Administration will have a positive influence. . . . About 15 major yards compared with the 11 at present and about 80,000 skilled workers compared with the 60,000 thousand at present will be needed.

"In other words," he continued, "about two-thirds of recognized shipbuilding industry will be devoted to naval construction. But the real production impact of this will not be felt for at least three years."

And then he includes this sobering added thought: "The remaining third of the shipbuilding industry will be dependent on merchant shipbuilding opportunies as they may develop."

And those opportunities are not developing. Since the start of this year about three large orders have come in—nationwide. And, while the Reagan regime will certainly push for a stronger maritime nation, one of its initial moves was to recommend a cutback in the funds subsidizing ship construction.

While this program had never been as successful as initially hoped, its paring back leaves little to stimulate shipbuilding until the private economy takes over in force.

In its report for Commerce's U.S. Industrial Outlook—1981, a Maritime Administration expert noted, "This is a cyclical industry which—in the U.S. as in other maritime nations—remains on the down side of the present cycle. Notwithstanding some heartening signs of recovery in certain areas, there is no immediate end in sight for the worldwide shipping recession."

Bearings

Ball and roller bearing manufacturers (with the exception of those badly hurt by the decline in auto sales) have seen business through the first quarter of 1981 running at about the same flat pace that characterized the industry through much of 1980.

Those manufacturers, however, heavily tied to the automotive industry have been struggling. "The people who service the needs of the automotive industry have had it rough," commented one industry spokesman, "although the rest of the industry has been having a fairly comfortable time of it."

The rest of the industry has not fared as badly is the fact that aerospace markets remain strong. "The aircraft has been strong right along and continues to be strong through the first quarter of 1981," said an official. Energy-related industries are also growing.

In the past year, overall shipments of ball bearings were up. Tapered roller bearing sales were down, and sales of other types of roller bearings remained about the same. The decline in tapered bearings was due primarily to the slump in automotive sales. Industry sources indicate that 1981 is following much the same pattern as 1980. And there is little optimism that business will get better soon, despite some guarded optimism from other segments of the economy.

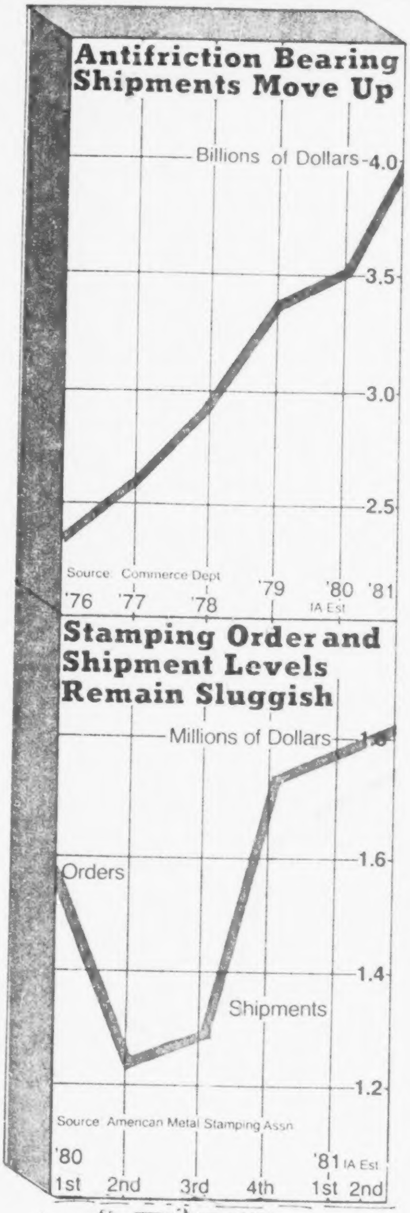
"I haven't seen many signs of sales improvement as yet," says one bearing manufacturer, "and from what I hear things are still in the doldrums. There have not been any indications of a turnaround."

Adds another industry official, "Automotive sales are are picking up a bit but they still aren't doing that great. From the general indications that I have gotten, business is rather stagnant with little signs of pickup."

"I think there is less optimism than there was three or four months ago as to an early pickup," notes another industry spokesman. "The vibrations that I have gotten indicate that manufacturers don't expect much improvement until the second half."

Several manufacturers now see the industry remaining level through much of this year but are optimistic about 1982.

"We think we see an aberration in the aerospace industry where they will have a temporary hiatus. We also see a brief slowdown in the machine tool industry," says one official. "However, we think things will really hum next year."

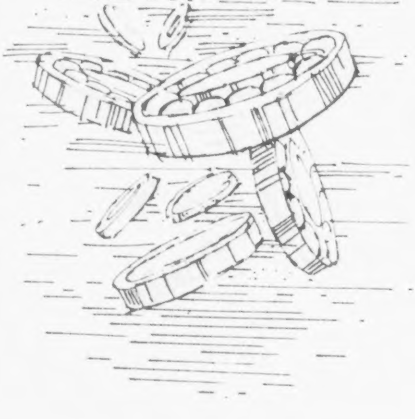


Antifriction Bearing Shipments Move Up

Source: Commerce Dept

Stamping Order and Shipment Levels Remain Sluggish

Source: American Metal Stamping Assn



Stampings

The first half of 1981 will be spotty for stampings.

Much like last year, stampers tied to certain depressed industries, particularly automotive, will feel some pain, while others may do quite well. If anything, the past year has led many stampers to the conclusion that survival will be based on a more diversified product mix.

Closing out 1980 and going into 1981, there are some disquieting signs in industry statistics. Sales are up over last year in dollars, but after adjusting for inflation, they show a slight decline. What's more, employment in the industry is down from previous periods.

The size of order backlogs beyond 90 days out for stampers also show signs of increasing dangerously early in 1981. Such an increase accompanied last April's recession and has some executives worried.

"I can't tell you anything good through the first half," says one midwestern stamper closely tied to automotive markets.

But another, who produces for electronics and office equipment was more ebullient. "We expect 15 to 20 pct growth," he says, noting the rest of the industry may not fare as well.

But one diversified stamper said, "The industry can hold its own. Sure the auto prognosis is grim for the next ten years. But we're going to grow into new markets and exports."

The stampers are concerned about continued high interest rates, which have discouraged their customers from holding inventory. "What we really need are some orders. They just aren't holding any inventory," says another. "I think they (customers) are being very tentative because of the Reagan thing. It hasn't jogged yet and they want to see how much in-fighting there is going to be and how long it will take to get out of Congress."

Geographically, stampers in the west seem to be faring the best. With housing and electronics there still holding their own west coast stampers supplying them haven't felt as bad a pinch as in the more depressed midwest and northeast.

But as members of the stamping industry are fond of saying, "When Detroit sneezes, we all catch cold." Right now, they're still grappling with that cold from their sick bed. And no matter how much better the rest of their markets get, Detroit still is going to drain a lot of out of stamping

QUARTERLY FORECAST

Valves

The nation's industrial valve makers believe the black ink and higher sales figures will keep flowing in the second quarter, particularly those orders from the oil country.

The record number of drilling rigs making holes provides the industry with a clear and healthy preview of its activity in the current quarter and the months beyond.

The oil patch is not the only segment of the energy market responsible for the strong outlook. The demand for valves is strong in another area of the market—refineries. Both majors and minors are redesigning their plants to produce more unleaded gasoline and to handle heavier crudes that the oil producers are requiring them to buy.

"We're having a tough time keeping up with the demand," reports one industry member.

"It's nice to know that you can sell virtually all the product you can produce," says another, but adds that the heavy demand also produces some fears. One concern, he explains, is imports and the ever-surer foothold that some foreign valve makers are attaining in the domestic industry's markets.

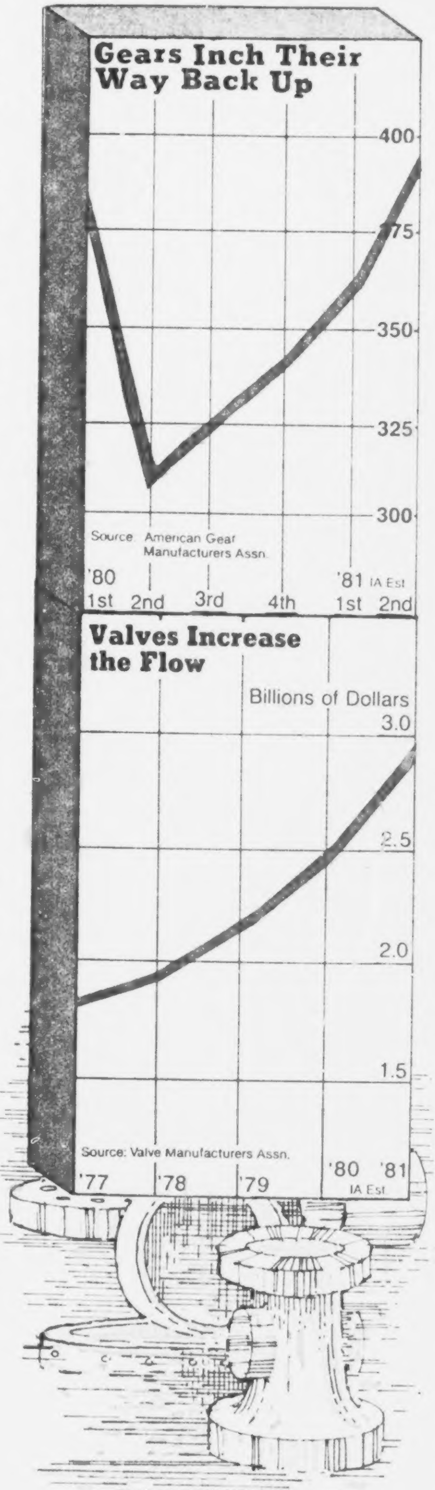
"I know the companies in the commodity valves have been under the gun for a while and I hate to see those overseas producers move into our end of the speciality market," he says.

While the demand remains strong for some areas of the energy markets, valve industry spokesmen see clouds on the horizon for several others.

The utility industry, other than replacement and maintenance needs, offers little hope for improvement over the short term. "We don't see an awful lot happening there," says one marketing manager. "The nuclear business has been in limbo since Three Mile Island and the electric power industry hasn't decided which direction it wants to go."

Synfuels, another segment of the market many valve manufacturers saw as a goldmine for the coming years may have lost some of its luster. The Reagan Administration seems much less enthusiastic than its predecessor regarding Federal funding for the big synthetic fuels facilities.

Says one industry manager, "I'd hate to see that program go down the tubes so soon. It had a lot of appeal for us, both in terms of the number of valves and the technical challenge that would have to be met."



Gears Inch Their Way Back Up

Source: American Gear Manufacturers Assn.

Valves Increase the Flow

Source: Valve Manufacturers Assn.

Gears

The gear industry is adopting a cautious but optimistic attitude about second quarter 1981. Gear manufacturers, like other capital goods producers, are anxious to see what tax breaks business can wrest from Congress. Their hesitancy to forecast stems in part from the uncertainty surrounding the direction of high interest rates.

A spokesman from a Midwestern component manufacturer says business "has been reasonably good" for his company which has yet to feel the recession's bite. Diversification has buoyed this manufacturer from the disaster that has struck those whose fortunes are linked to the depressed construction, housing and automotive markets.

This spokesman anticipates that the oil to coal conversion by businesses reacting to skyrocketing oil prices will mean more business. But everything hinges on how fast tax breaks move through Congress, he adds, saying that 1982 could be a real good year.

Meanwhile, this producer of open gearings, speed reducers and shaft couplings is looking for no real growth or just enough growth to cover inflation which is not all bad, the spokesman comments.

An Eastern seaboard gear manufacturer's spokesman describes first quarter 1981 as "the biggest quarter in our history." When asked about the rest of the year, he replies "it should be the best year in our history." This producer of compressors, graphic arts equipment and machine tools also owes its immunity from economic ills to its diversification.

The spokesman explains that his company would not suffer from a recession in the United States because of the diversified markets it has entered around the world. However, a worldwide recession would have a substantial impact. Still, the firm's future is rosy as long as someone is drilling for oil, he says.

An Eastern producer of power transmission equipment sees better prospects for the second quarter. A company spokesman explained that the second quarter should be an improvement from the first quarter which was off 10 pct from the first quarter of last year. He added that this is a very optimistic view given the economic picture. This manufacturing executive says he feels it will take President Reagan a year before he makes any inroads into the economy.

EFFECTIVE MAR. 16, 1981

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	299	295	256	291
Buffalo	65	68	46	61
Pittsburgh	425	435	433	432
Youngstown	131	130	123	132
Cleveland	187	172	150	158
Detroit	186	186	160	178
Chicago	650	656	623	641
Cincinnati	117	107	101	99
St. Louis	102	100	95	88
Southern	261	262	251	260
Western	147	149	148	163
U.S. Production	2,570	2,560	2,386	2,503

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective March 16, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,570	2,560	25,448	25,416
Capability Utilization Rate	85.8	85.5	81.5	82.5

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/1/81)	23.598	23.598	23.362	21.180
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$105.17	$105.17	$ 98.50	$102.17
No. 2 bundles	$ 72.83	$ 72.83	$ 70.83	$ 66.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$117.50	$117.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	102.50
No. 1 steel, Chicago	106.50	106.50	99.50	97.50
No. 1 bundles, Detroit	106.50	106.50	96.50	105.50
Low Phos., Youngstown	113.50	113.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	106.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	141.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective March 16, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	85.00-86.00	83.00-85.00	3/13/81
Lead	36.00	34.00	3/ 6/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20-$25
Gold per troy oz	$499.75
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$400-$415
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$12.19
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Mar. 9—597.16
Mar. 10—604.22
Mar. 11—605.36
Mar. 12—600.14
Mar. 13—602.07

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	66¾	61⅝
Red brass	72⅛	65⅝
Comm. bronze	74	66⅞
Mang. bronze	65½	63¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	61
Light copper	52
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	31
Radiators	51

Aluminum

New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	41	—42
No. 1 composition	58	—59
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	49	—50
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	16	—17
Whole batteries	8	— 9
Type metal	17	—18
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAR. 16, 1981

(Effective March 16, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$117.00 to $118.00
No. 2 hvy. melting	107.00 to 108.00
No. 1 dealer bundles	126.00 to 129.00
No. 1 factory bundles (auto)	128.00 to 129.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	128.00 to 129.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	100.00 to 101.00
No. 1 RR hvy. melting	121.00 to 122.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	112.00 to 113.00
RR specialties	127.00 to 128.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$106.00 to $107.00
No 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	123.00 to 124.00
No. 1 factory bundles (auto)	126.00 to 127.00
No. 2 dealer bundles	83.00 to 84.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	115.00 to 116.00
Shredder scrap	112.00 to 113.00
Machine shop turn.	54.00 to 55.00
Mixed bor. and turn.	55.00 to 56.00
Shoveling turnings	58.00 to 59.00
Cast iron borings	72.00 to 73.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No.1 RR hvy. melting	111.00 to 112.00
Scrap rails, random lgth.	104.00 to 105.00
Reroller rails	132.00 to 133.00
Rails, 2 ft. and under	136.00 to 137.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	167.00 to 168.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	129.00 to 130.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	106.00 to 109.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	98.00 to 101.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	90.00 to 93.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	83.00 to 84.00
No. 1 dealer bundles	106.00 to 107.00
No. 2 bundles	54.00 to 55.00
No. 1 busheling	103.00 to 104.00
Drop forge flashings	91.00 to 92.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	74.00 to 75.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	113.00 to 114.00
Electric furnace bundles	113.00 to 114.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	97.00 to 98.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	98.00 to 99.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	24.00 to 25.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	105.00 to 106.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 busheling	84.00 to 85.00
No. 1 dealer bundles	82.00 to 83.00
No. 2 dealer bundles	49.00 to 50.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	110.00 to 111.00
Structural and plate, 2 ft. and under	118.00 to 119.00
Rails, 2 ft. and under	96.00 to 97.00
Scrap rails, random lgth.	76.00 to 77.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	101.00 to 102.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 96.00 to $ 97.00
No. 2 heavy melting	86.00 to 87.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 bundles	74.00 to 75.00
No. 1 busheling	96.00 to 97.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	86.00 to 87.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	107.00 to 108.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	95.00 to 96.00
Rails, 18 in. and under	117.00 to 118.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	71.00 to 72.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	54.00 to 55.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	95.00 to 96.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to $ 80.00
No. 2 hvy. melting	69.00 to 71.00
No. 1 dealer bundles	90.00 to 92.00
No. 2 bundles	40.00 to 42.00
No. 1 busheling	93.00 to 95.00
Shredder scrap	86.00 to 88.00
Machine shop turn.	15.00 to 17.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	70.00 to 72.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	88.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	56.00 to 57.00
Shredder scrap	111.00 to 112.00
Cut structural plate 2 ft. and under	123.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00

EFFECTIVE MAR. 23, 1981

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	305	299	269	292
Buffalo	72	65	47	69
Pittsburgh	461	425	449	448
Youngstown	139	131	125	126
Cleveland	181	187	167	157
Detroit	183	186	166	187
Chicago	654	650	598	655
Cincinnati	114	117	95	104
St. Louis	100	102	83	93
Southern	269	261	252	277
Western	142	147	149	172
U.S. Production	2,620	2,570	2,400	2,580

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81, Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective March 23, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,620	2,570	28,368	28,400
Capability Utilization Rate	87.5	85.8	82.9	82.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/9/81)	23.776	23.598	23.598	21.180
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$107.17	$105.17	$ 98.50	$102.17
No. 2 bundles	$ 75.17	$ 72.83	$ 71.83	$ 66.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$117.50	$117.50	$104.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	102.50
No. 1 steel, Chicago	112.50	106.50	99.50	97.50
No. 1 bundles, Detroit	106.50	106.50	101.50	105.50
Low Phos., Youngstown	113.50	113.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	106.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	141.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective March 23, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.00-89.00	86.00-88.50	3/18/81
Lead	36.00	34.00	3/ 6/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	41.50-41.75	39.50-41.75	12/ 1/80

ALUMINUM: 99.5% ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be	$105.00
Beryllium 97% powder 200 f.o.b. Cleveland, Reading	$120.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$526.00
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$410-$420
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz	$13.16
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Mar. 16—605.68
Mar. 17—605.68
Mar. 18—612.16
Mar. 19—627.35
Mar. 20—623.95

Scrap Prices

Brass Mill Scrap

(cents per lb, over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	66¾	61⅝
Red brass	72⅛	65⅝
Comm. bronze	74	66⅞
Mang. bronze	65½	63¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	80
No. 2 copper wire	70
Light copper	61

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	66
Light copper	57
No. 1 composition	70
No. 1 comp. turnings	68
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	32
Radiators	52

Aluminum

New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	16	—17
Whole batteries	8	— 9
Type metal	17	—18
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAR. 23, 1981

(Effective March 23, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$117.00 to $118.00
No. 2 hvy. melting	107.00 to 108.00
No. 1 dealer bundles	128.00 to 129.00
No. 1 factory bundles (auto)	128.00 to 129.00
No. 2 bundles	81.00 to 82.00
No. 1 busheling	128.00 to 129.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	100.00 to 101.00
No. 1 RR hvy. melting	121.00 to 122.00
Rails, 2 ft. and under	131.00 to 132.00
Scrap rails, random lgth.	112.00 to 113.00
RR specialties	127.00 to 128.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	725.00 to 735.00
18-8 turnings	625.00 to 635.00

Chicago

No. 1 hvy. melting	$112.00 to $113.00
No. 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	123.00 to 124.00
No. 1 factory bundles (auto)	129.00 to 130.00
No. 2 dealer bundles	83.00 to 84.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	115.00 to 116.00
Shredder scrap	112.00 to 113.00
Machine shop turn.	54.00 to 55.00
Mixed bor. and turn.	55.00 to 56.00
Shoveling turnings	58.00 to 59.00
Cast iron borings	72.00 to 73.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No.1 RR hvy. melting	114.00 to 115.00
Scrap rails, random lgth.	104.00 to 105.00
Reroller rails	132.00 to 133.00
Rails, 2 ft. and under	136.00 to 137.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	167.00 to 168.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	132.00 to 133.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	109.00 to 112.00
Shredder scrap	98.00 to 101.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	90.00 to 93.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	83.00 to 84.00
No. 1 dealer bundles	106.00 to 107.00
No. 2 bundles	54.00 to 55.00
No. 1 busheling	103.00 to 104.00
Drop forge flashings	91.00 to 92.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	110.00 to 111.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	74.00 to 75.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	113.00 to 114.00
Electric furnace bundles	113.00 to 114.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	105.00 to 106.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	24.00 to 25.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	105.00 to 106.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 busheling	84.00 to 85.00
No. 1 dealer bundles	82.00 to 83.00
No. 2 dealer bundles	49.00 to 50.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	110.00 to 111.00
Structural and plate, 2 ft. and under	118.00 to 119.00
Rails, 2 ft. and under	96.00 to 97.00
Scrap rails, random lgth.	76.00 to 77.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	101.00 to 102.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 97.00 to $ 98.00
No. 2 heavy melting	88.00 to 89.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	98.00 to 99.00
Shredder scrap	106.00 to 107.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	98.00 to 99.00
Elec. furnace, 3 ft. & under	88.00 to 89.00
Structural and plate, 2 ft.	115.00 to 116.00
Structural and plate, 4 ft.	108.00 to 109.00
No. 1 RR hvy. melting	98.00 to 99.00
Scrap rails, random lgth.	99.00 to 100.00
Rails, 18 in. and under	118.00 to 119.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	71.00 to 72.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	54.00 to 55.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	95.00 to 96.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	39.00 to 40.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to $ 80.00
No. 2 hvy. melting	69.00 to 71.00
No. 1 dealer bundles	90.00 to 92.00
No. 2 bundles	40.00 to 42.00
No. 1 busheling	93.00 to 95.00
Shredder scrap	86.00 to 88.00
Machine shop turn.	15.00 to 17.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	70.00 to 72.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	56.00 to 57.00
Shredder scrap	111.00 to 112.00
Cut structural plate 2 ft. and under	123.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00

Codes identify Producers listed in the Key on page 112. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	22.45

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	21.10
U1	20.40
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	20.40
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	20.40
C6	20.15
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
A7	18.45
D1	19.50
S1, J3, D1	19.50
W3	19.50
N4	17.50
W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	19.50
B3	23.55
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	29.75
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	17.35
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	29.75
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	21.70
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	37.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	20.00
K1	18.95
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	24.30
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	25.00
Long-Terne, Midwest	
W5	35.85
A7, U1	25.85
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	20.85
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$23.88
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$18.14
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$20.60
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	16.17
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	20.60
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	29.70
C2	23.025
M9, W10, T11, S8	29.50
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5(2), W10, L2, Y1. W8, R3	29.20
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	29.75
West	
B6	33.40
B6	30.45
R3	30.45-33.40
South	
B5	31.35
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	24.85
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	33.45
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.45
T11, S8	33.20
C10	30.60
Midwest	
B5(2), R3, C10	32.90
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	32.90
B5	33.45
West	
R3	34.55-36.60
B6	33.55
B6	36.60
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	23.25
Midwest	
A7, B3, G3, R3, G2, S1	23.25
I3, U1, W8, I4, W5	23.25
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	21.75
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	24.20
K2	24.20
South	
U1	25.65
A8	17.60
West	
C6	21.20

Producer Key
With Principal Offices

A4	American Cladmetals Co. Carnegie, Pa
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga
A11	Atlantic Wire Co., Branford, Conn
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa
B4	Blair Strip Steel Co., New Castle, Pa
B5	Bliss & Laughlin, Inc., Harvey, Ill
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa
C15	G. O. Carlson, Inc., Thorndale, Pa
C16	Connors Steel Co., Birmingham, Ala
C20	Calumet Steel Div., Chicago Heights, Ill
C21	Cumberland Steel Co., Cumberland, Md
D1	Detroit Strip Div., Cyclops Corp
D2	Driver Wilber B., Co., Newark, N. J
D3	Driver Harris Co., Harrison, N. J
E3	Enamel Products & Plating Co., McKeesport, Pa
E4	Elliot Bros. Steel Co., New Castle, Pa
F1	Firth Sterling, Inc., McKeesport, Pa
G2	Granite City Steel Co., Granite City, Ill
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich
G4	Greer Steel Co., Dover, O
G5	Green River Steel Corp., Owensboro, Ky
G6	Gibraltar Steel Corp., Buffalo, N. Y
G7	Georgetown Steel Corp., Georgetown, S.C
G8	Guterl Special Steel Corp
H1	Hercules Drawn Steel Corp., Livonia, Mich
I2	Ingersoll Steel Div., New Castle, Ind
I3	Inland Steel Co., Chicago, Ill
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif
K1	Kaiser Steel Corp., Fontana, Calif
K2	Keystone Consolidated Industries, Inc
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp
M9	Moltrup Steel Products Co., Beaver Falls, Pa
M11	Midwest Steel Div., National Steel Corp., Portage, Ind
N1	Northeast Precision Steel Co., Boston, Mass
N4	Northwestern Steel & Wire Co., Sterling, Ill
N6	Northwest Steel Rolling Mills, Seattle, Wash
N9	Nelson Steel & Wire Co., Chicago, Ill
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore
P2	Phoenix Steel Corp., Claymont, Del
P3	Wyckoff Steel Div., Plymouth, Mich
P9	Pacific States Steel Co., Niles, Cal
P13	Penn Dixie Steel Corp., Kokomo, Ind
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y
R6	Rodney Metals, Inc., New Bedford, Mass
R7	Rome Strip Steel Co., Rome, N. Y
S1	Sharon Steel Corp., Sharon, Pa
S7	Stanley Works, New Britain, Conn
S8	Superior Drawn Steel Co., Monaca, Pa
S10	Seneca Steel Service, Buffalo, N. Y
S16	Southern Precision Steel Co., Gulfport, Miss
T4	Thomas Steel Strip Co., Warren, O
T5	Timken Company, Steel Division, Canton, O
T7	Texas Steel Co., Fort Worth, Tex
T9	Triumph Electro Corp., Chicago, Ill
T10	Tennessee Forging Steel Corp., Harriman, Tenn
T11	Teledyne Columbia-Summerill, Carnegie, Pa
U1	United States Steel Corp., Pittsburgh, Pa
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va
W5	Wheeling-Pittsburgh Steel Corp
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa
W14	Whittaker Steel Strip Div., Detroit, Mich

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		22.04	29.81	35.23	36.73	34.05	31.59	25.88	44.92	48.52	55.67	59.67	76.50
Baltimore		28.86	32.70	37.35	40.19	34.64	41.53	25.74	45.24	52.99	56.92	67.72	72.14
Birmingham		24.37	26.27	33.27	36.05	32.89	30.98	23.32	42.20	40.00	54.49	53.70	77.71
Boston		26.44	29.86	31.28	39.42	36.24	31.96	24.65	43.45	52.73	58.13	67.14	71.99
Buffalo		31.78	33.93	38.84	39.35	35.86	33.53	25.34	44.54	54.23	55.94	66.88	75.62
Chicago		24.32	29.49	32.06	36.60	28.85	27.56	19.29	40.25	45.75	51.03	57.29	63.39
Cincinnati		22.88	28.32	31.18	32.34	33.02	27.45	19.15	41.01	45.30	50.70	56.62	67.16
Cleveland		28.12	33.70	37.64	38.27	32.90	31.48	24.55	56.59	50.51	55.19	62.97	68.85
Denver		31.44	35.24	39.26	40.04	34.75	33.54	25.32	46.20	54.01	61.03	68.83	76.96
Detroit		24.07	28.97	31.78	32.82	29.58	28.20	18.87	40.86	45.27	50.69	56.03	63.58
Houston		26.03	34.01	35.22	44.28	32.26	34.71	30.03	47.69	55.13	61.66	68.96	76.06
Kansas City		27.68	31.56	32.57	32.40	30.28	27.07	27.16	42.79	48.51	54.35	60.75	66.97
Los Angeles		29.35	35.55	39.20	43.59	38.59	36.80	34.95	49.03	61.99	68.69	77.28	84.61
Memphis		28.92	31.40	34.63	36.61	33.66	31.03	24.90	44.04	51.28	56.68	64.65	80.43
Milwaukee		22.77	28.08	33.98	31.95	28.52	27.15	18.73	39.92	44.34	49.57	54.42	61.81
New York		20.11	24.02	27.18	42.58	30.29	28.69	23.98	46.20	52.94	58.30	67.49	73.85
Philadelphia		27.80	31.66	59.35	42.55	34.23	32.46	25.88	45.82	53.99	57.44	69.83	73.15
Pittsburgh		30.25	35.50	39.19	38.85	35.18	33.14	27.58	44.45	47.38	54.92	59.46	73.68
Portland		30.19	32.54	38.29	37.61	31.59	34.35	31.86	53.54	60.36	63.70	58.00	....
San Francisco		29.94	35.40	38.27	44.92	39.23	35.60	35.58	48.95	61.98	68.56	75.62	83.96
Seattle		29.72	27.21	37.91	39.29	32.06	33.99	36.62	50.79	61.45	65.12	72.05	84.83
Spokane		21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis		24.88	30.06	28.22	30.00	29.39	28.40	20.95	41.06	43.88	50.61	57.11	64.26
St. Paul		25.19	28.09	24.79	32.13	30.51	28.09	18.95	41.22	43.09	51.09	58.08	64.56

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2$\frac{15}{16}$; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

APR

15

1981

MANAGEMENT IN AMERICA: PART I

Chilton's
APRIL 15, 1981

IRON AGE

SPECIAL METALWORKING SMALL PLANT EDITION

HOW SMALL PLANTS CAN BOOST

OUTPUT & PROFITS

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IRON AGE

VOL. 224, NO. 11

APRIL 15, 1981

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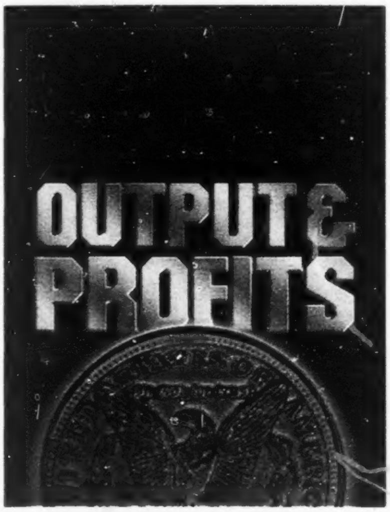

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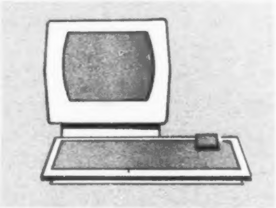


How the computer can help in materials selection

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

DEFENSE CONTRACTS WILL PRIME THE PUMP

Metalworking stands to gain in sales with the huge outlays expected over the next four years.

By Edwin W. Bowers
and George J. McManus

Proposed increases in military spending by the Reagan Administration will mean benefits for metalworking related industries. But at this early stage the questions remain: How much and when?

Proposals from the White House being considered on Capitol Hill constitute the highest peacetime outlay for defense in U.S. history, a total of $32.6 billion added to the military budget this year and next. With Congressional approval the plans would lay the foundation for a much bigger Navy, a new fleet of bombers, more M-1 tanks (formerly called XM-1) and F-5 and F-16 jet fighters. For businesses large and small the prospective increases mean a surge in sales.

But if there is one absolute peacetime rule in the Congress it is the higher the outlay or the cutback, the longer it will take to pass the legislature.

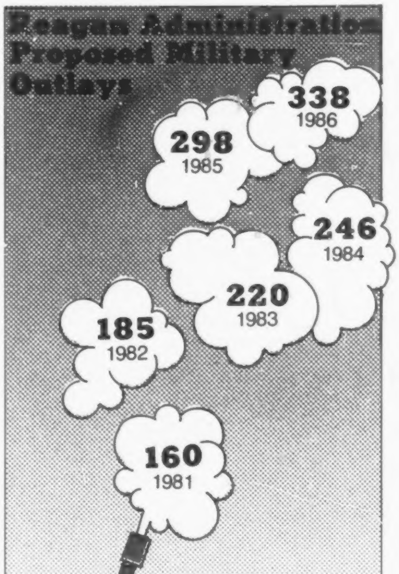
"We're talking about at least many months," a spokesman for the Senate Armed Services Committee told *Iron Age*. "This is really a very complicated process. The proposals affect the whole budget for all the military services of the U.S. There are subcommittee hearings scheduled for both the House and the Senate, then various appropriations committees must meet, the proposals must pass both Houses and then go to conference committee; it's going to take a while."

At the outset, in early March, Defense Secretary Caspar Weinberger, told the Senate Armed Services Committee the largest military funding increases the Administration is seeking, compared with former President Carter's requests, are for modernization—an additional $2.0 billion in Fiscal Year, 1981, and $13.7 billion in '82.

Businesses which expect 1981 to be a turnaround year from this year with the economy picking up in 1982, look hopefully toward Congressional approval of the defense spending proposals.

"I think the proposals to increase spending, assuming they pass, most assuredly will be beneficial to contract metalworking companies," says Harold Corner, Chief Executive Officer, C and J Industries, Meadville, Pa. Mr. Corner is also President of the 3600 member National Tooling and Machining Association.

Characteristically, because Congressional approvals are pending, businesses are low-keyed over future prospects. For example, the White House is proposing an increase of six of F-14 fighter planes in Fiscal 1981 to 30, at a cost of about $36 million each. Nevertheless, a spokesman for Grumman Aerospace, Long Island, builder of the planes, said the increase would "simply allow the company to operate at current levels." The company has a production rate capability of 30 planes.



"In the past," said Secretary Weinberger, "the Air Force has been forced to procure aircraft inefficiently." Now, however he says, "we propose to accelerate several of the tactical aircraft programs and thus complete planned quantities earlier than previously scheduled."

It can't happen anytime too soon for companies which have a fair percentage of military business, according to Ron Masnicki, executive vice president, National Aerospace, Agawam, Mass. "What they are proposing is more than encouraging from a business standpoint. Our hope is that some of it will get into the system relatively soon. That it is not something that won't come into being until '83, '84 or '85."

The White House program for military aircraft reads as follows: Fighter-attack planes procurement requested for Fiscal 1982 to be increased by 96 to 222. This will include F-15 production increased by 12 to 42 and F-16 production up by 24 aircraft to 120. A single F-16 costs about $14 million. The Convair Div. of General Dynamics is the prime contractor for F-16s.

Said Secretary Weinberger: "The previously planned 729 aircraft program for Fiscal '82 will be increased to 765." Also, for Fiscal, '83, F-15 production will be increased to 42 craft compared with Mr. Carter's request for 18.

When it comes to complicated, military weapons it is a "given" in industry that it takes a few years from decision to funding to production.

"The second half of '80 was flat," said Mr. Masnicki. "Prospects for '81 look down and unless this proposed increased spending for hardware is approved and the purchase orders are actually placed soon, it's not going to help us that much."

"Cash flow is the most critical problem facing defense contractors," said John Richardson, president, Hughes Aircraft. "That type of shortage prevents defense firms from making capital investments to improve productivity and lower weapon manufacturing costs."

"Aircraft production rates have been particularly low and inefficient for a number of years," said Secretary Weinberger. "We propose to accelerate several of the tactical aircraft programs and thus complete planned quantities earlier than previously scheduled."

In the works is a new manned bomber, perhaps a version of the previously-killed B-1. The new budget requests $2.4 billion in 1982 for five of the new craft. Under consideration are: Reviving the B-1; a B-1 variant that incorporates innovative features; an enlarged version of the FB-111 fighter-bomber or the hush-hush Stealth craft. Pentagon officials say the only practical choice is the B-1 variant. Rockwell International built the B-1 prototypes and would be considered the leading candidate for the new model. It's also probable General Electric's Aircraft Engineer Group's F-101 engine, designed for the B-1 would be used should the new plane be approved. The Defense Department has until mid-June to make its decision.

The Reagan proposal also includes funds for revamping the engines of about 300 of the 600 KC-135 aerial tankers—a project assigned to Boeing—and ordering seven Boeing 707s along with 18 modification kits for them.

"It's obvious this will have a positive effect on our company," said a Boeing spokesman. "But nevertheless," Boeing says, "it's too early to speculate what this will mean in terms of investment potential. You've got to realize we're still a long way from getting the defense appropriations approved."

Also in the Pentagon's proposals are 12 vertical-takeoff jet planes, the AV8B. Currently McDonnell Douglas is the prime builder at a cost of $73.9 million each. Should the plans go through it's also likely McDonnell Douglas will get the call for eight KC10 tanker planes with a price tag of $60.25 million each.

Shipyards could realize as much as $30 billion in additional revenues under the Reagan Administration's five-year plan. This would be $15 billion more than was projected by the Carter White House. About 15 major yards and 80,000 skilled workers will be needed should the President's proposals for upgrading the Navy be approved, the Shipbuilders Council of America says. Right now 11 shipyards and about 60,000 workers are involved in military contract work.

"Given approval," said Council President Edwin Hood, "about two-thirds of the recognized shipbuilding industrial base will be devoted to naval construction, but the real production impact will not be felt for at least three years."

"It is not possible to change the readiness of our Naval forces over-

The Winners in Defense Contracts

During fiscal year 1980, eleven companies received prime contract awards totaling $1 billion or more. The eleven companies and a brief description of their major work are as follows:

Company	Major Work	Awards
General Dynamics Corp.	F-16 and F-111 aircraft. STINGER and RIM-66 missiles. MK-15 Close-in weapon system. Nuclear submarines.	Billions $3.5
McDonnell Douglas Corp.	F-15 EAGLE, F-4 PHANTOM, F-18 fighter aircraft and C-10 cargo aircraft. HARPOON, TOMAHAWK, and DRAGON missiles.	3.2
United Technologies Corp.	F-100, TF-30, TF-33, and J-56 turbofan and turbojet engines. UH-60 UTTAS, and CH-53 SEA STALLION helicopters.	3.1
Boeing Co.	Airborne Warning and Control System (AWACS). TOMAHAWK, SHORAD, MINUTEMAN, and ROLAND missile systems. Radio and TV equipment for the Advanced Airborne Command Post. Airframe structural components.	2.4
General Electric Co.	Nuclear Submarines. F-18 fighter aircraft engines. UH-60 UTTAS helicopter engines. MINUTEMAN missile. Miscellaneous electronics and communications equipment.	2.2
Lockheed Corp.	TRIDENT, POLARIS, and Standard Arm missiles. P-3 ORION, C-141 STARLIFTER, C-5 GALAXY, and C-130 HERCULES aircraft. Space vehicles. Amphibious assault ships.	2.0
Hughes Aircraft Co.	TOW, SHORAD, PHOENIX, ROLAND, and TRIDENT missile systems. Radar equipment and guided missile systems for A-6 INTRUDER, F-14 TOMCAT, and F-15 EAGLE aircraft. R & D for electronics and communication equipment.	1.8
Raytheon Co.	HAWK, PATRIOT, SPARROW, and TRIDENT missile systems. Electronic countermeasures. Underwater sound equipment. Miscellaneous electronics and communications equipment.	1.7
Tenneco, Inc.	Aircraft carriers and subchasers. Maintenance and repair of ships. Warehouse trucks and tractors.	1.5
Grumman Corp.	F-14 TOMCAT, E-2 HAWKEYE, E-6 PROWLER, and A-6 INTRUDER aircraft. Electronic countermeasures for F-111 aircraft. Modification of aircraft equipment.	1.3
Northrop Corp.	F-5 FREEDOM FIGHTER aircraft. Guided missile launchers and remote control systems for the HAWK missile. Electronic countermeasures and miscellaneous aircraft accessories. R & D missile and space systems.	1.2

night," Secretary Weinberger noted. "But we must have Naval superiority." He said he favors a 600-ship Navy, almost double the present size.

Proposed are two nuclear-powered attack submarines, an Aegis-class cruiser, two frigates and two amphibious landing ships.

How much profit shipyards might realize can't be pinned down. Most major yards are subsidiaries of large corporations which do not break out specific profit figures for ship operations. Since the proposed naval build-up will be largely continuations of existing programs, it's probable the business will go to yards that customarily handle Navy contracts. These include Bath Iron Works Shipyard at Bath, Me., and Todd Shipyards Corp., with facilities in Los Angeles and Seattle.

"How much defense work will filter down to smaller companies is conjectural," said Howard Glazer, Chief Executive Officer, ASC Corp., Owings Mill, Md.

"Nevertheless," he adds, "anytime the U.S. government spends money I should think that money would have to filter through all the industries in a city or an area. We do quite a substantial portion of defense work."

Steel producers expect some benefit from increased military spending, but not right away.

There is a need to rebuild military inventories of spare parts and conventional arms. Any increase in the spending for military aircraft would serve to keep pressure on the supply of aerospace alloys. There could be indirect effects as contractors tool up for future programs.

No one really knows how much steel goes into defense applications. The clearly identified portion is negligible. Only 175,000 tons went directly into defense projects last year. That was 0.2 pct of total shipments. Armco, Inc. looks for an increase of 1.2 pct in 1981.

A somewhat larger amount probably moves through indirect channels into defense work. Much of the metal shipped is in the form of very expensive alloys. For specialty producers, a modest increase in spending could have a significant impact on dollar volume.

"I would expect it would have a positive effect on our business," says P. R. Roedel, president of Carpenter Technology Corp.

Similar comments come from Robert Anderson, chairman of Rockwell International Corp. "... it's apparent that an increase in defense spending could have some very positive results for Rockwell International," says Mr. Anderson.

His company is hoping for a revival of the B-1 bomber. It is involved in the Army's Hellfire missile program and the GBU-15 glide bomb.

Alfred DuPaul, President of A & A Tool, Orange, Conn., expresses concern whether there is enough industrial capacity in the U.S. to handle a huge influx of orders. "I begin to wonder if it's too much of a good thing," he says. Also, Mr. DuPaul worries about the shortage of skilled manpower.

But, he says "we'll be pleased if it happens. We would expect our business to increase and sustain at a very hectic pace." □

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How Defense Spends to Be Given a Thorough Going Over

Spending for defense has always been as controversial as it has been complicated. There are enough people on both sides of the issue to start their own war.

Thus it should come as no surprise that intense criticism has again been leveled at the "military-industrial complex" with Congressional investigations waiting in the wings.

A Massachusetts Institute of Technology study recently charged the U.S. military-industrial establishment is in trouble and unless the situation improves, this country will not have the capability to wage a conventional war or respond to an all-out attack by an adversary.

At the same time a report from the House of Representatives' Armed Services Committee says the Defense Department has failed to plan adequately for defense industry preparedness. It charges that government procurement practices discourage high productivity and new capital investment by private defense companies.

Joining the chorus was the investigative staff of the House Appropriations Committee which came out with allegations of billions of dollars of waste in defense spending.

As a result of the Armed Services Committee allegations, Rep. Joseph Addabbo (D., N.Y.) Chairman of the House Appropriations Defense Subcommittee, says he will oversee a thorough investigation of Defense Department spending policies. "In the event of a war, the U.S. defense industry would find it almost impossible to expand its weapons production suddenly and dramatically in the numbers necessary to sustain a prolonged conflict," said Committee Chairman Rep. Melvin Price (D., Ill.).

Author of the MIT study, Jacques Gansler, says the existing free market system has failed to produce a defense industry that is economically efficient or strategically responsive. Mr. Gansler has spent 28 years observing defense policies as Deputy Assistant to the Defense Secretary for Materiel Acquisition and as Assistant Director of Defense for Research and Engineering. Mr. Gansler said excess production capacity exists in the aircraft industry while insufficient capacity exists in shipbuilding.

"In the supply of critical parts there is a 'dual economy' consisting of an upper level (large contractors) who receive exorbitant profits and a lower level (subcontract-suppliers) who get insufficient financial returns," said Mr. Gansler. The result, he says, has been fewer suppliers, rising prices, lengthening lead times and a lack of production responsiveness.

Also, he says, there are "several existing barriers" that keep large numbers of subcontractors and suppliers from entering the defense business.

For example, many subcontractors refuse to do defense business because of burdensome Federal regulations which they feel will jeopardize competition in the civilian market. "Pork Barrel" situations in which Congressmen work to keep their home district firms in the Defense business make it difficult for a new supplier to replace an old one even when the newcomer is the low bidder, Mr. Gansler charges.

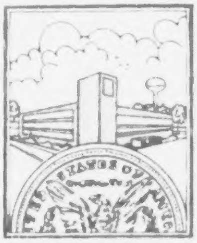
Rep. Richard Ichord (D., Mo.) says the country's industrial base is "crippled by declining productivity growth, aging facilities and machinery, shortages in critical materials, increasing lead times, skilled labor shortages, inflexible government contracting procedures, inadequate defense budgets and burdensome government regulations and paperwork."

Mr. Gansler suggests that $3 billion a year could be saved by revitalizing the defense industry.

SMALL FIRMS FIND MANY ROADS YIELD INVESTMENT CASH

As small firms grow more sophisticated, their capital needs expand. Many lenders are in line to meet the increasing loan demand.

By Keith W. Bennett



For small companies looking for fresh capital, 1981 may not turn out as badly as some gloomsters have predicted. Far from a dire money crunch, there seems to be a lot of money moving into the investment market.

And for once, respectable chunks are specifically earmarked for small businesses.

At a time when a 30-employee shop is buying half-million-dollar machining centers, it's increasingly difficult to define a small business any more. But as its tool requirements and process grow more sophisticated, the small business develops an increasing appetite for investment cash. And bankers know it. As one banker pointed out, "The little companies used to talk about putting on their knee pads when they went over to ask their banker for money. Nowadays, it may be the other way around."

Small firms looking for money, should start their search at their local bank. Bankers in Chicago, a city with one of the biggest concentrations of small business anywhere, report that despite fears about the continuing recession, small companies are shopping for money.

"We're getting a pretty good loan demand, which is what we had forecast," says Leo Garman, senior vice president for commercial banking, First National Bank of Chicago.

Loan demand dropped a little under forecasts in 1980 as business dropped off. Nonetheless, it was the biggest loan year to date for First National of Chicago. For 1981, "money supply is good, and money cost is down," notes Mr. Garman. "It's hard to say how much the cost of money will decline but there are estimates of a 13 pct to 14 pct prime rate by year end." For the small plant manager/owner, that may not be cheap, but it's cheaper than it was.

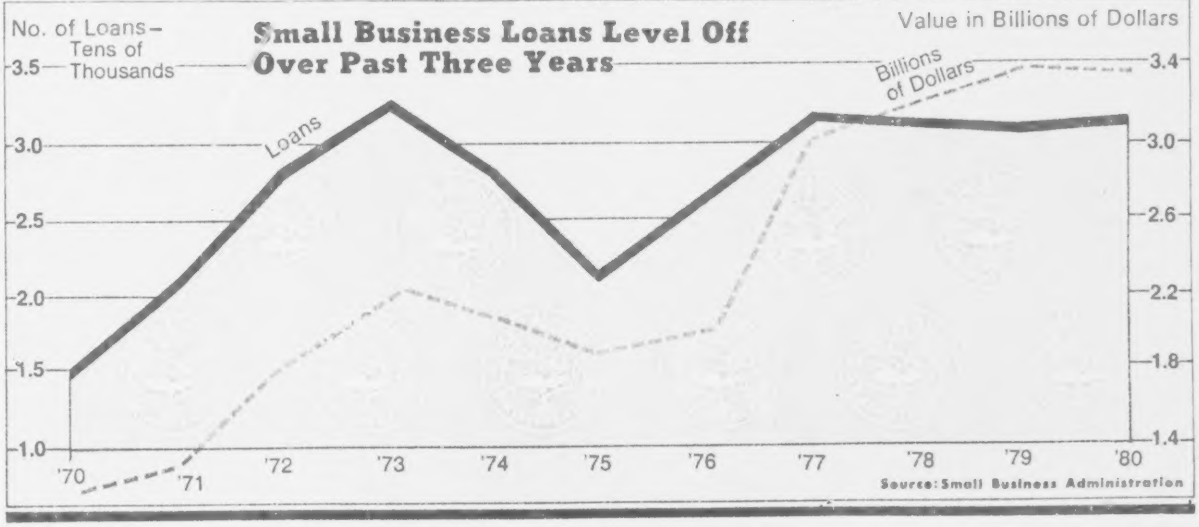
"There are three 'tiers' of money activity at the bank," points out Mr. Garman. "First, a solid company can look at a straight commercial loan, say of five years, if it wants to buy equipment.

"Second, if it is already more highly leveraged (in debt), it might not be a candidate for a straight commercial loan. Then it can go to the bank's Commercial Finance division to get loans on its receivables or inventory.

"And third, if the company needs more equity in the business, the bank probably has a SBIC Small Business Investment Company (SBIC), that purchases stock in the company for cash."

Harris Trust & Savings Bank, Chicago, is the 28th largest bank in the U.S. Charles Davis, vice president, noted the types of loans that banks can offer small businesses.

"Banks principally offer direct loans, and industrial development loans (on projects where the Small



Small Business Loans Level Off Over Past Three Years

Source: Small Business Administration

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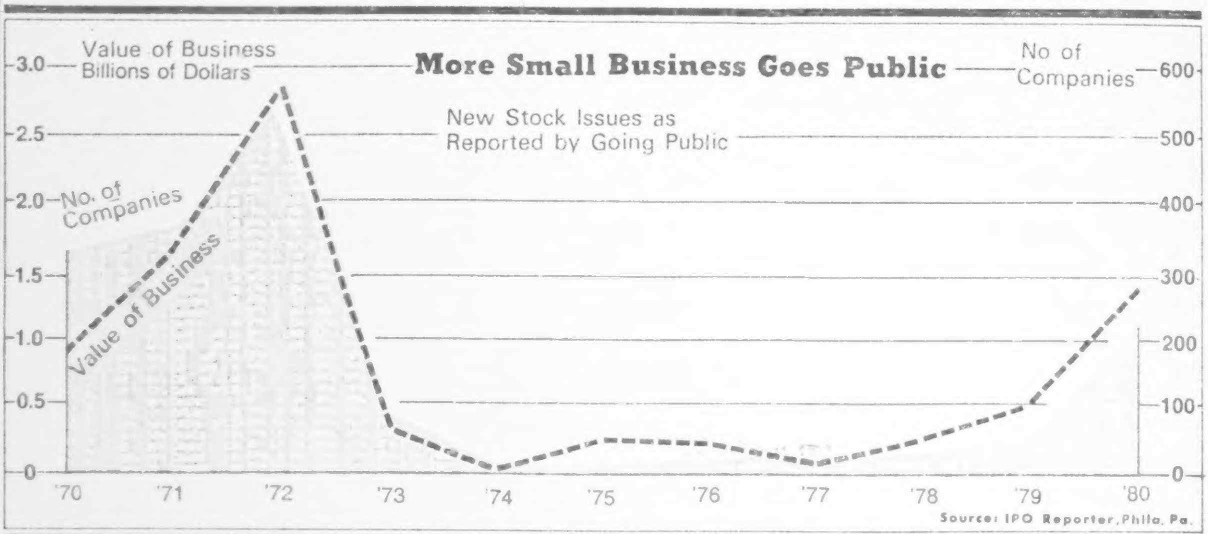

Source: IPO Reporter, Phila. Pa.

Business Administration guarantees up to 90 pct of the face value of the loan to the lending bank).

"We had a strong loan demand in 1980 and 1981 is holding very strong. Our division has had a record loan volume. So the interest rates really don't seem to have impacted equipment buying and borrowing for working capital," adds Mr. Davis.

There are other sources of financing outside of bank vaults, he says. "There seems to be a lot of equity money (people wanting to buy shares in smaller companies) and the banks' own funds for direct loan are in good shape, so there's lots of money available. And bankers are moving aggressively into middle-range loans."

This is still concentrated in some big amounts—larger than the small company might want or need—since these loans can range from $250,000 to $10 million.

Commercial National Bank, a smaller bank in the Chicago area with $173 million in assets, is also turning its attention to smaller businesses. "Loans in the $200,000 to $800,000 range are an area we haven't yet exploited as much as we'd like to," says Paul Kane, director of business development.

"We've done some loans in the small business market in the past, but we see more growth in this (loan demand) in the outlying suburbs and we're going after it. It fits in well with a small community bank like ours," he adds.

He agrees that a small borrower will probably pay a quarter percent over the prime rate and can go as much as 2 pct over.

Where's all the new bank investment money coming from? "A lot of people had cash in treasury notes and that's now moving out into the business community," Mr. Kane notes. He attributes the growth in loan demand—even in a slow period like late 1980—to the more sophisticated marketing efforts of small companies.

"We're working on a loan for a machining job shop that covers a $100,000 machine tool. They hadn't planned to buy it for another three months. But the company owner went out and got plane tickets and made some 'cold' business calls around the U.S. early this year, and now he's got some new machining work, so he needs the new machine earlier than he planned," Mr. Kane says.

Big or small, banks have substantially warmed up to small business clients in the past year. They can loan money, establish a Small Business Administration (SBA) arrangement or contact foreign capital sources.

But there are other money sources and they're very attractive, too. There are about 350 member companies in the National Association of Small Business Investment Companies, headquartered in Washington, D.C. These are venture capital companies (SBICs) that often take a higher risk investment than banks.

They seek equity in the small company, usually through convertible preferred stocks or convertible bonds or a debenture with stock warrants (options to buy stock) attached to the debenture deal. Since the SBIC debt is subordinate to any debts owed the banks by the company in which they invest, they usually charge a higher rate than banks.

But here's another one of those pleasant surprises that 1981 occasionally springs on the pessimists.

"SBIC money cost about 14 to 16 pct last year and it's about the same now. Typically, an SBIC wants to buy into a company with growth potential and a good quality of management. The investment tends to be long term. Last year, a record year, the SBICs put another $300 million into new investment. In 1981 that figure will rise again." The speaker is Walter Stults, president of the national SBIC association.

"A typical deal is in the $200,000 to $300,000 range," says Mr. Stults, "but it can go all the way from $50,000 to several millions of dollars."

Why are they still eager to invest? "There's still a lot of real growth opportunity in the small business group," reflects Mr. Stults.

After the banks and the SBICs, small firms can try the Private Investment Partnerships. Like the SBICs these companies have their own association, The National Venture Capital Association in Washington, D.C., with about 100 members.

These companies have about $1.8 billion in capital invested, compared with $1.3 billion invested by the SBICs. The venture capital market has a third member, says Stanley Pratt of Venture Capital Journal. U.S. corporations have venture subsidiaries that channel another $1.3 billion into the venture capital markets for an aggregate of $4.5 billion at present.

This investment pool hovered between $2.5 billion and $3 billion from

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1969 to 1977, after Congress increased the capital gains tax in 1969. But when capital gains were reduced somewhat in 1978, there was an immediate response that brought another $1.789 billion into the investment pool, Mr. Pratt relates.

This money is aimed at the new, small company with advanced technology so it's a key area for U.S. industry to recover the technological edge it enjoyed in the past. The smaller firm needs capital gains benefits to come out ahead, Mr. Pratt notes. An improved depreciation rate only helps the larger, older company.

A typical private partnership can also be a healthy pool of cash. A partnership might have anywhere from $10 million to $60 million out in investments. And despite all that's been said about the demise of small businesses, this market has shown unprecedented growth over the last three years. "The '80s may become known as the Decade of the Entrepreneur," Mr. Pratt observes.

His surveys suggest that the number of entrepreneurs looking for investment capital is rising even faster than the growth of capital. So both sides of the equation seem to be flourishing.

Small companies that want to give up equity for cash will join a horde of new publicly-owned companies (See chart p. SP-14). New stock issues withered in the mid-1970s, but the flood of new stock announcements that began in 1979 is still gaining strength.

A study by "*Going Public: The IPO Reporter*" suggests that through February of this year, not only were new stock issues rising, but the rate of acceleration was also gaining. In February of 1980, new stock issues amounted to $35 million. In February of 1981, they were up to a stunning $183 million.

And 1980 was a pretty good year for companies that elected to go public. They sold $1.4 billion of stock in 237 issues. That's the best year since the boom of 1972. In 1975 it was so bad that only 15 new stock issues were written.

Registration has been simplified by the Securities & Exchange Commission (SEC), and new laws have also eased the issue of stock by small companies. One of these laws makes it easier for venture capital firms to go public.

Small firms interested in stocks can contact their bankers or stockbrokers or ask the SEC Office of Small Business Policy about Regulation A stock offerings which are designed for small companies.

If stocks aren't your cup of tea and you want to retain more equity in your company, you can go the bond route. As pointed out earlier, banks are a contact point for getting an SBA guarantee on a business loan. Or you can look for a bonding authority. There are taxing bodies that can raise money by floating bond issues at city, state and county government levels. And there are also separate authorities that are development corporations, chartered by a government body.

In 1979, according to the Public Securities Association, there were 161 county bond issues that raised $979 million. City governments raised 349 issues worth $1.1 billion and statutory authorities raised $1.6 billion on 462 issues.

This money pool is expected to rise again this year despite opposition by some congressmen who argue that tax free bonds are gaining strength fast enough to cut the government tax take.

Loan demand is growing because of sophisticated marketing efforts by small firms.

The House Ways and Means Committee, in fact, scheduled hearings this month to consider cutting back on the rate of issuance of these industrial development bonds (IDBs). So those who hope to obtain money via this route should keep an eye on the committee.

In 1980, the total IDBs amounted to $3.8 billion additional investment capital available to industrial companies wanting to build new plants. The best year was 1977 when IDB volume hit $4.7 billion. This year, it should rise barring any negative action by Congress.

Since the SBA loaning authority is already scheduled for a cut in funds that could amount to 25 pct, government policy from several government agencies could impact this investment pool.

One example of the success of such programs is the new $6.5 million foundry expansion and automation by Universal Foundry, Oshkosh, Wis. Similar loans from public authorities have gone into service centers, precision machining plants and a host of other small business ventures.

One aircraft engine manufacturer financed development of a new aircraft engine in the venture capital market, though this was done through private investors. But it was possible because of tax law. If these tax laws are changed, the investment pool could again begin to dwindle.

Adams Group, Inc., Chicago, specializes in industrial revenue bonds. Asked about the effect of the proposed cutback in SBA loan funds, George Waugh, executive vice president, says that the cuts would produce a serious cutback. The direct SBA loan programs would be eliminated and even the loan guarantee program—where banks supply the cash from their own funds and the SBA merely stands behind them in case of a loss—would be significantly cut.

However, the Adams Group found 1980 a very strong year for IDB demand and other government-related bonds. Typically, the borrower can come in from $25,000 up to $550,000 on direct SBA loans. But some bonds, including municipals, have gone over $5 million.

But the Adams Group points out there are at least nine government agencies with some kind of loan funds or loan guarantees. Adams' job is to help the prospective borrower approach the right agencies and help prepare a brief that increases the borrower's chances of getting a loan or a bank loan on a government guarantee.

Things can't look too bad to Adams despite concern over the SBA's future. The Adams Group recently tripled the size of its Chicago operation, one of 28 centers across the U.S. This company also handles SBIC investments and recently set up a $1 million credit line for a Wisconsin company on its receivables and inventory.

The stock brokerage houses are also a point of contact for industrial bonds. E. F. Hutton, for example, has been historically identified with stocks, but is also an important factor in the bond market.

There also seems to be a rise in the availability of funds for the smaller company through the financial corporations. Walter E. Heller International Corp., with both national and international markets, had record business volume (and earnings) in 1980. The direct loans and factoring are handled by Walter E. Heller & Co. and Walter E. Heller Overseas Corp., which scored a 12.8

pct earnings gain in 1980. This company is also involved in banking and its purchases of receivables last year totalled a record $6.1 billion high.

Maynard Wishner, president of Walter E. Heller & Co., says, "First quarter (1981) money demand is brisk, and over fourth quarter. Some spring gains, are, of course, typical. But leasing, which is another measure of capital investment plans, is also rising. In fact, leasing has been one of our stronger performance areas."

The rising movement of money in the investment markets partly represents a combination of acquisitions and divestitures.

These financial companies are a basic element in the small business financial picture. Commercial Credit Co., part of Control Data Corp., belongs to this group of perhaps 180 commercial financial companies, members of the National Commercial Financial Conference. They do about a $105 billion annual volume, estimates Thomas Lawson, corporate vice president for marketing, Commercial Credit Services Co.

Commercial Credit Co. dates back to 1912 when it was specifically formed to meet the credit needs of small companies. The firm's long history in business financing has cast it at least partly as a kind of service industry for banks. In 1980, an unprecedented 47 pct of its new small business activity came from bank referrals. The past average was about 26 pct.

In business financing, Commercial Credit Company experienced its biggest year in 1980. Now, says vice president Lawson, volume gains in the Midwest and West point to another increase in 1981 business financing volume. To serve the small business client at his home base, Control Data has set up 13 business centers in the past 12 months. The centers developed $21 million worth of SBA loans for 148 small businesses in the first year. By 1985, Control Data, through its financial subsidiaries, plans to have 500 business centers.

Chester Goss, president of C.I.T. Corp., New York City, notes that he's been in the financing business for 35 years. "People always want money," he says. He believes the inflation rate has begun to slow a little, a good omen for prospective borrowers and lenders. C.I.T. is also expanding, opening three offices in the first quarter for a total of 40.

C.I.T. Financial Corp., the parent of C.I.T., has about $3 billion in loans and leases. Mr. Goss points out that "practically all of our loan business is in small business loans. That can be machine shops, contractors, injection molders—people who buy tools for their various industries."

Despite the ravages of the 1980 recession in the small business ranks, C.I.T. saw loan volume rise to make 1980 the best year in company history. "And we've had a consistent growth pattern for seven to eight years," adds Mr. Goss. "I expect we may see a plateau at that level in 1981, but let's remember that this is an extremely high plateau."

He now expects loan demand to begin to expand during second quarter. This also bodes well for the small business that wants to borrow.

The 1980 recession doesn't seem to have dried up loan money for the small company.

"There is no evidence of lessening competition among lenders. A lot of people are out there with money they want to loan to prospective borrowers," he explains.

All these money sources seem reasonably flush. And that still leaves capital that is available through the leasing market. That market is now estimated at $150 billion to $200 billion, after growing from about $100 billion in the mid-'70s.

A January poll by the American Association of Equipment Lessors suggests that its 700 members generally expect another leasing gain during 1981. Many capital goods builders have their own leasing volume programs and some good financing bargains are popping up there, too.

United States Machine Tools, Inc., announced financing at 30 pct under prime in February. DoAll Co., announced a new, seven-year leasing plan that cuts the initial payment on a $30,000 machine tool to $1,800.

Frank Jones, executive vice president of Giddings & Lewis Inc., offers one clue to the interest by small companies in more capital. "It's surprising how many smaller companies are investigating flexible manufacturing systems. The inquiries began to appear in 1980, reached a peak during the Machine Tool Show. But they've held at that high level. This hasn't yet been reflected in the new orders we're getting, but they seem to be buying tools for later adaptation into such a system."

The 1980 recession doesn't seem to have dried up loan money for the small company. If anything, the investment cash pool appears to be growing. The small company is cautious about making new credit commitments, but they're still being made. And a growing number of financial institutions seem anxious to make it easier for the small firm to get more cash.

Another small business lending institution, Barclay's American Business Credit, an affiliate of Barclay's Bank, makes loans to all types of manufacturers.

Says Richard S. Ballard, vice president, "Small businesses have traditionally been strong buyers. We make loans to them based on receivables, inventory equipment and commercial real estate.

The one thing Barclay's will not get involved with is selling off a company if a company is financially unable to continue operations.

We'd rather assess the company's assets at the beginning of the loan agreement, notes Mr. Ballard, "and if the company has a sound financial situation, good management and a good market base, make the loan.

"The last thing we want to do is get involved with a work-in-process situation or running a company that goes out of business. If that happens," Mr. Ballard says, "we're stuck with a lot of goods caught in the production process which could take three to five weeks to complete."

"Although Barclay's is in the job of managing risk," according to Mr. Ballard, "through our various monitoring techniques we can reduce the risk we take."

"One of the most important ways we do this is to analyze the management team operating the company. If we have a high level of confidence in the individual and he can demonstrate to us that he is competent at what he does then more than likely we'll grant some assistance. To me," Mr. Ballard says, "management integrity is the most important asset a company can have going for it and as far as we're concerned it can make the difference in lending the money."

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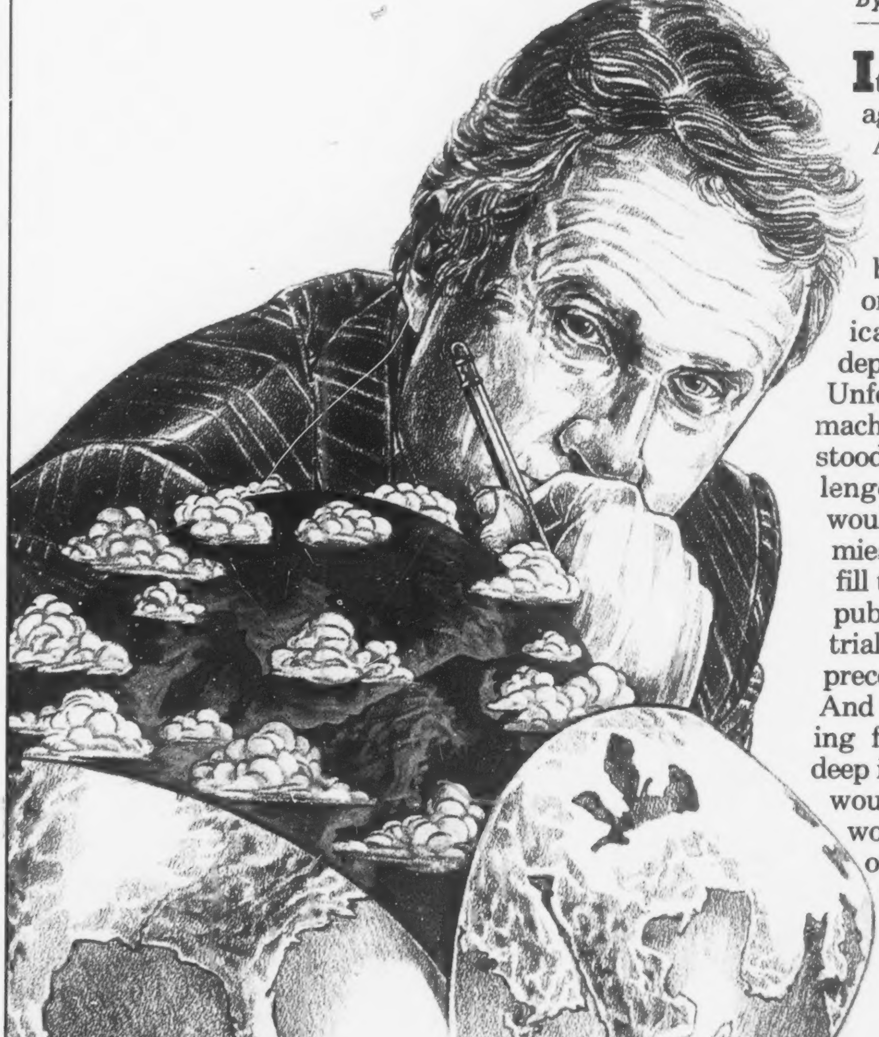
RESHAPING THE VISION

WHERE THE BUSINESS SYSTEM STANDS NOW

By Roger Lopata



It was fewer than 40 years ago.

A war that had devastated the aged industrial giants of Europe left the infant U.S. bristling with a booming wartime economy. No longer was America reeling from its great depression.

Unfettered from making the machines of war, U.S. business stood ready to face any challenge. It could, and indeed would both rebuild the economies of the war's victims and fill the hands of its own eager public with an array of industrial and consumer goods unprecedented in history.

And to perform this astonishing feat, America would dig deep into its own population. It would build a new class of workers, a managerial class, of greater scope and power than ever imagined.

Business itself would grow to a new role of preponderance in the culture. Indeed, by the sixties, mammoth con-

consolidations turned companies into multinational giants that dwarfed whole countires.

Behind it all were the managers. As if sucked in by a vacuum left by industry's meteoric growth, they filled the voids. The demands on managers, in fact, often grew faster than their ability to meet them.

Also growing was the constantly changing society around them. Ultimately, a schism was born that evolved to gargantuan proportions between business, the government, and the public.

Then, as quickly as their power had been generated, it ebbed. Perhaps it was the burgeoning size of the new managerial class that led to the era of its own powerlessness. More likely it was a combination of factors, factors that, as the century ends, could again spell a new era of management.

But nothing evolves in a vacuum. The growth of industrialized America, the rapid changes in its organizational structure and the molding of a new class of manager all resulted from confluence of complex interacting forces, economic, social, behavioral, historical and political.

A great many of those forces can be traced to the explosive wartime growth of the American economy. In the years between 1940 and 1944, gross national product grew an unbelievable 61.4 pct in constant dollar terms.

Forces beyond the gearing up of a wartime machine were at work. America had passed from its economic beginnings in entrepreneurial capitalism. Gone were the Carnegies, the Getty's, the barons of early industry. A nation soured by the bitter harvest of the depression had swept them aside in a wave of anti-business sentiment.

The country had passed into a period of national capitalism. Where private capital had failed, perhaps national capital would succeed, reasoned an electorate that four times gave the reins of the country to Franklin Roosevelt.

And indeed, national capitalism did what business had been unable to do, but at a cost historians still are unwilling to assess. It laid the groundwork for a level of government involvement in the private sector hitherto unimagined by American business.

Moreover, it provided a basis for the modern roles of government and business. And, although brief, those years from 1933 to 1950 may have been the swan song for the truly entrepreneurial American manager.

But who were the new managers? Where had they come from and what was the force behind their creation?

The force was growth. Despite a severe postwar economic contraction, the roots of American industry were strong, stronger, in fact, than many even dreamed.

Where 1946 saw consumer goods in short supply and production lost to the most crippling series of strikes in U.S. history, 1947 saw the first budget surplus since the depression. General George Marshall had outlined his gigantic plan to provide for the economic recovery of Europe.

The scope of the postwar economy, business realized, could be vast. Unscathed by the ravages of a global war, the U.S. could serve huge new markets with little or no competition. Corporations, some in their infancy, could establish firm footholds in foreign markets while rebuilding the devastated continent. And they did.

What's more, as the growth rate rocketed, gaping holes were left in organizational structures of the firms. New managers were needed in greater numbers than ever before.

And it is here that one of those confluences of historical forces occurs. Probably due more to the lobbying in the American Legion more than anything else, the ranks of American management were about to be opened to an entirely new class.

The GI Bill, which the Legion pressed so hard for, proffered the opportunity of a college education to virtually any veteran. And a college degree, coupled with the broad opportunities created by the expanding economy, opened management to the masses.

Here was the birth of the new manager—managerial capitalism.

Those new managers may represent the closest the American system ever really came to its Horatio Alger dream. They represented a broader cross section of the society than ever had been granted access to the gates of power. Women and blacks still were conspicuously absent from their ranks, but the new managers included first generation Americans and immigrants never before offered the opportunity to manage a company they did not own.

As the GI Bill offered explosive opportunities to them, though, a reaction was occurring that would alter the structure of the organization.

For those who had not gone to college, the period represented a drastic shrinking of opportunities. It became increasingly difficult to make the jump from the operating part of an organization to its managerial head. The company, instead of being a pyramid on which one could climb from the bottom to the top, became two pyramids.

The lower pyramid, the operating area, could be scaled, but it would become increasingly difficult to make the jump from the top of that to the new, next pyramid up, management.

It would be the college boys who would enter that area and for them, initially, opportunities would be limitless.

Something else was happening too. The new, college-educated managers were bringing more of the tools of so-called scientific management to the job.

True, scientific management was nothing new. It dated back to the days of Frederick Taylor, a turn of the century engineer who did extensive studies for Bethlehem Steel. But Taylor's theories centered around the physical. He scientifically determined optimal shovel sizes for workers loading rice coal as opposed to shovels for men shoveling much heavier iron ore.

Ludicrous sounding today, Taylor's study resulted in Bethlehem reducing its shoveling workforce from 500 to 150 men and increasing worker output from 16 tons to 59 tons per day.

But the new managers were bringing with them the tools of newer "gurus." By the 1940s, the theories of Elton Mayo, the father of human relations in industry were gaining a foothold.

Mayo, an industrial psychologist from Harvard, performed a series of experiments in the late twenties that, 20 years later, would send shockwaves through management.

Working with a group of employees selected from Western Electric's Hawthorne plant, Mayo varied working conditions in a series of tests involving lighting and temperature. Regardless of the environmental change, however, the group's output increased. And finally, when Mayo returned conditions to the original circumstances, the output increased again.

Managing a profit center was the inside lane on the fast track for the engineer-managers

In the 1940s, the conclusions of the Hawthorne studies would become formalized. And what today may seem elementary to us, back then shook the very foundations of management.

Mayo realized the plant is a social system. More importantly, he pointed out, while formal organization may be key to managing on paper, the informal organization, the work, or peer group in the plant is paramount to successful managing in person. It is that informal group, for instance, that will decide what output should be, what a fair day's work is for its members.

And managers took Mayo's studies to heart. At least some did.

Managers out of the GI bill college boom have been called the happiness boys or the machiavellian manipulators because to many, the idea of Mayo's industrial relations represented cow psychology. The idea, they concluded, was that contented cows

EFFECTIVE MAR. 30, 1981

would give more milk. Their treatment of the informal group, therefore, was somewhat superficial. Token human relations was the order of the day.

But changes were already in the wind. The extraordinarily rapid growth of the companies was about to again change the way managers managed.

The economy was growing rapidly. In 1950, Xerox introduced the first copy machine. Dacron and Orlon were invented and television set sales totaled 7 million. Ominously, oil surpassed coal as the primary U.S. energy source.

As the size of the average firm grew, however, it became apparent that a single line of top down management might no longer be adequate. The size became an issue. Managers were overburdened, their functional areas too diverse and complex.

The fifties saw the introduction of new management tools to deal with the problems. Areas could be split up and be managed more effectively, executives reasoned. A movement towards decentralizing the organization could rekindle the entrepreneurial spark in an increasingly alienated force of managers. Profit centers were born.

Another factor was responsible as well for decentralization. The number of incorporations was skyrocketing. Between 1950 and 1960, the annual rate of business formations would more than double.

The number of publicly held corporations in diverse hands was growing. The owner as sole decision-maker was an increasingly rare beast. Instead, executives lost power to stockholders and boards of directors.

The two forces combined to splinter authority even more in the organization, creating a generation of managers who were profit pushers—the profit center men.

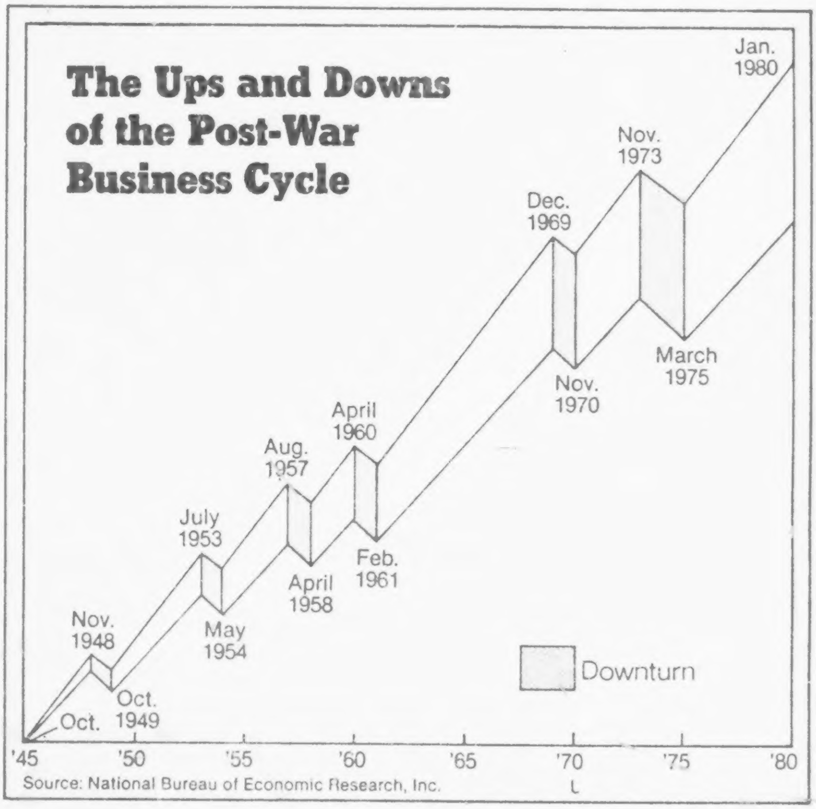
In many cases, the decentralization was incredibly successful. GE's concept of key area results provided a new, strong identity for its alienated managerial force.

GE operated with a series of small departments almost like independent companies within the huge conglomerate. For the manager, the department was something he could wrap his arms around and control.

It also gave birth to another new area within the organization. The operations of the small departments were overseen loosely by a central corporate staff. The corporate staff, at this point, had little authority and served a monitoring function, but its importance would grow.

At the time, however, it was the profit pusher who was king. GE stuck with its system until 1968 and, during that era, the inside man was on the fast track.

The whole trend was promotion from within and managing a profit center was the inside lane.



The Ups and Downs of the Post-War Business Cycle

Source: National Bureau of Economic Research, Inc.

But, as with any system, there was a flaw. The profit pushers were too upwardly mobile. Called mobile managers, so rapid was their advancement that managers who succeeded best in the organization were often those who could best manipulate the bottom line. Anybody could obtain results from an area for a short period. Unfortunately, it often would be left gutted and problem-ridden.

This is exactly what began to happen. Managers changed jobs as often as every 18 months, leaving behind serious damage in many cases. Replacements would find customer relationships failing and retarded employee development plaguing departments that had been run by profit pushers with no interest in the long run. Often, in the interest of economizing for the short term, equipment would go unmaintained.

Knowing their tenure might be brief if they performed, the profit pushers ended up doing more damage than good. Their emphasis became naturally focused on the short term.

And while their own outlook on the fast track was good, the prognosis for the firm was not.

With short term profit pushers running the show and little in the way of centralized controls, many was the firm that was left devoid of any kind of institutional memory. It was, to paraphrase Santa Anna, as if the firm could not remember the past and thus was condemmed to repeat it.

And GE was not alone. The fast track profit center manager was the king of the jungle of most businesses in those years.

Even in the most successful companies, damage could be done. Xerox, whose early marketing efforts have been likened to taking candy from a baby, had its share of problems. Even though the company was the only game in town for copiers, which were rumored to be selling as much as 800 pct above cost, the attitude of managers could be damaging.

Xerox's philosophy was a decentralized one. If the firm could attract good managers who could run with the product, it wouldn't need highly formalized central controls. If all those managers ran in the right direction, internal efficiency would take care of itself.

And it did, to a point. But suddenly, things changed. Competition began to develop. As it did, the problem of a short term managerial force with no strong financial controls became obvious.

The competition was leaner. It had to be. It was entering an admittedly lucrative, but also increasingly competitive market where it had no share.

And so the go-go days gave way to more competition and better developed markets. The evolutionary forces on management began pushing in new directions.

Xerox was not the only firm facing new, vigorous competition. The U.S. was experiencing a blossoming of new companies from within and without. What's more, the now decade-old Marshall Plan bore fruit. The rebuilt industries of Europe and Japan, able to supply their own demand, were beginning to export in search of new markets.

The pressure on all U.S. industries, therefore, was to become more competitive. The easiest way was to tighten up the organization, institute more controls.

Coincidentally, two other developments would facilitate the new structuring.

New, more precise measurements were evolving in financial areas that would make data critical for controls easier to gather. As a result, the need for tightening the organization and the new developments would combine to make financial reporting a prime management tool. The bottom line became king.

Also in finance, the development of contemporary financial theories centering around the capital asset pricing model and modern portfolio theory would gain wider acceptance. The new financial theory put emphasis on the value of diversification and used net return on investment as a benchmark for evaluating proposals.

The effect of the latter was to push managers toward an even more short term outlook.

So the short term didn't die. A new species was evolving that appeared to be better adapted to functioning in the short term. It was moving away from the loose, unstructured situational approach and toward the systems approach.

The rapidly developing world of modern financial theory was combining with the ascendancy of the computer to create a new generation of managers, number crunchers. Buoyed by the financial theory and possessed with a belief in the absolute reliability of bottom line results, they would push into new diversifications—the conflagration of conglomeration—and further into the short term frontier.

The idea of mergers was not new to America. The first round of such activity had occurred back in the trust days when the country's first conglomerates formed.

From 1899 through 1904, the years when such giants as U. S. Steel, American Can and International Harvester were formed, some 2,500 mergers occurred.

The average number of mergers from the end of World War II through 1959 was 430 per year. For the decade of the sixties, the annual average was 1,250 per year. And in the incredible year of 1969, corporate America saw 2,307 combinations.

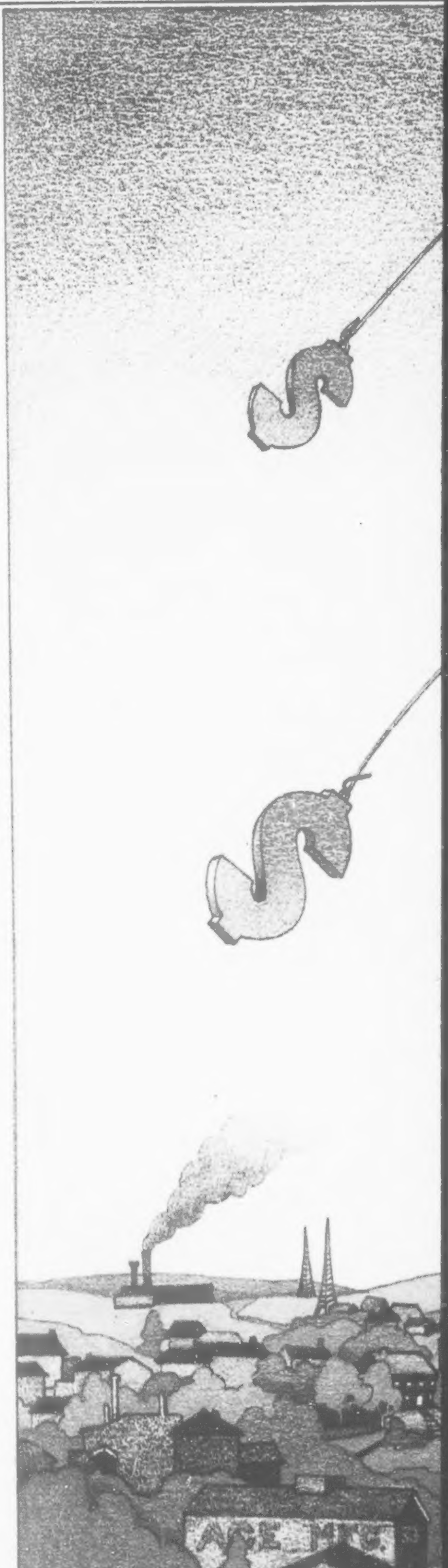
Inflation highlighted a period of volatile social and economic change that spurred massive changes.

The difference between the two flurries of mergers was that where the turn of the century saw combinations to integrate like firms, the sixties saw true diversification into wholly new realms of business.

And the merger game could propel small companies into the role of corporate Goliath. ITT, for example, in 1955 was the 80th largest company in the country with sales of a modest $450 million. By 1970, it was the eighth largest corporation in North America on sales of more than $6 billion. And almost all that growth was through diversified mergers.

It shouldn't be surprising then that the driving force behind ITT did what he did in changing management. Harold Geneen came from the perfect background. An accountant who cut his teeth with American Can and Jones & Laughlin Steel, among others, he became president of ITT in 1959.

He realized the importance of accounting controls for the far-reaching arms of ITT but, and here he was vi-



sionary, Geneen probably was the first corporate executive to realize that he couldn't wait for the accountant's statements to run his profit centers.

He set out to develop a matrix of staff positions throughout the corporation that would act as an on-line system reporting back faster than any financial controls ever could.

The matrix system was copied primarily from earlier applications in defense and aerospace projects, but it had not been used in strictly business climates.

Geneen's system was a logical way to deal with the growing problems of size, diversity of business lines, the need for more central control and a more fully organized management structure. But it was not without problems.

The matrix management system, which here was still in infancy, was about to add a new level to the corporate structure.

The matrix itself did not take the place of the profit centers or managers. It simply provided a matrix, a new grid of managers, that acted as an overlay to operations.

A new pyramid had been added to the dual pyramid structure then. And, as the popularity of the matrix system grew, change again would move through the organization of management.

The new matrix managers' charge was two fold: to act as specialists in the particular functional area they were assigned to, to assist managers in that particular profit center, and to also be concerned with the performance of the total organization. It was in the latter role where they reported to the central corporate staff and that was the genuinely new role for the matrix manager.

The matrix provided top management with multiple links through the organization and, therefore, better controls of profit center managers who otherwise might run amok. But as that happened, the power of those managers, the profit pushers ebbed.

Those middle managers suddenly were stuck in the middle pyramid, no longer on top. What had once been a challenging position—fraught with responsibility, authority, opportunity for rapid advancement and tremendous autonomy—now became trapped and, ultimately, powerless.

Instead of relating to a single hierarchy, the middle manager was saddled with multiple chains of command to report to. One net effect was to markedly increase the stress on middle managers. They found themselves in a dilemma of being caught in the middle.

The ultimate decision making authority was pulled upward in the firm, away from them, leaving the once powerful centers as more or less adjuncts of control. Naturally, the upward mobility of their positions decreased markedly.

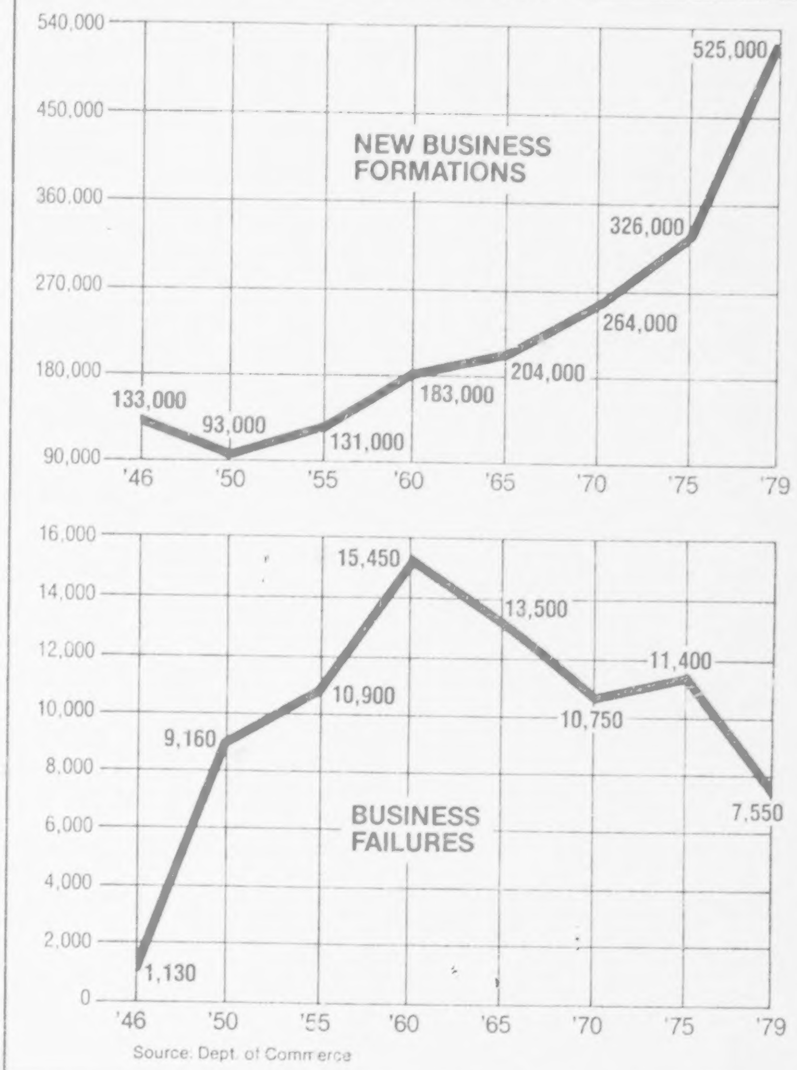
But there was another dimension to the new growth. Whereas the original development of profit centers was aggressive and offensive, built as it was around marketing and new market opportunities, the matrix building appeared defensive.

The profit pushers generally were engineers. Indeed, the best fast track for profit center men had been through engineering degrees coupled with marketing jobs.

But matrix management dealt with control. The matrix manager often had financial background. It was here that the controller, the accountant and the finance man, the MBA-type grew to pre-eminence.

But there were foundations for the defensive response by business. The world outside was changing rapidly. And rapid change, increased volatility, called for a more defensive posture.

(Cont. on p. 70)



The Entrepreneur Still Has a Shot at Making It

Source: Dept. of Commerce

The changes were indeed volatile. In 1970, imported cars took 15 pct of the U.S. market. After the longest business expansion in post-war history, the economy fell into a deep recession. The Penn-Central Railroad would go bankrupt that year.

Government was changing too. The seventies saw the creation of the fledgling Occupational Safety and Health Administration and Environmental Protection Agency.

Government acted to prop up failing businesses like Lockheed Corp. through the Emergency Loan Act of 1970, but in so doing, laid the ground work for more government intervention in the business world.

Economics was becoming a volatile sea for the ship of business. Recession and inflation twined together into a knockout punch for many businesses. The prime rate, which for decades had hovered below five pct began fluctuating, sometimes as high as an unheard of eight pct.

To put that period of economic volatility in perspective, perhaps, it should be pointed out that when President Richard Nixon declared his New Economic Policy in 1970 to combat inflation—a 90-day price and wage freeze—inflation's annual rate was about five pct.

But by 1974, inflation would near nine pct.

That year, however, an event of far greater importance would occur.

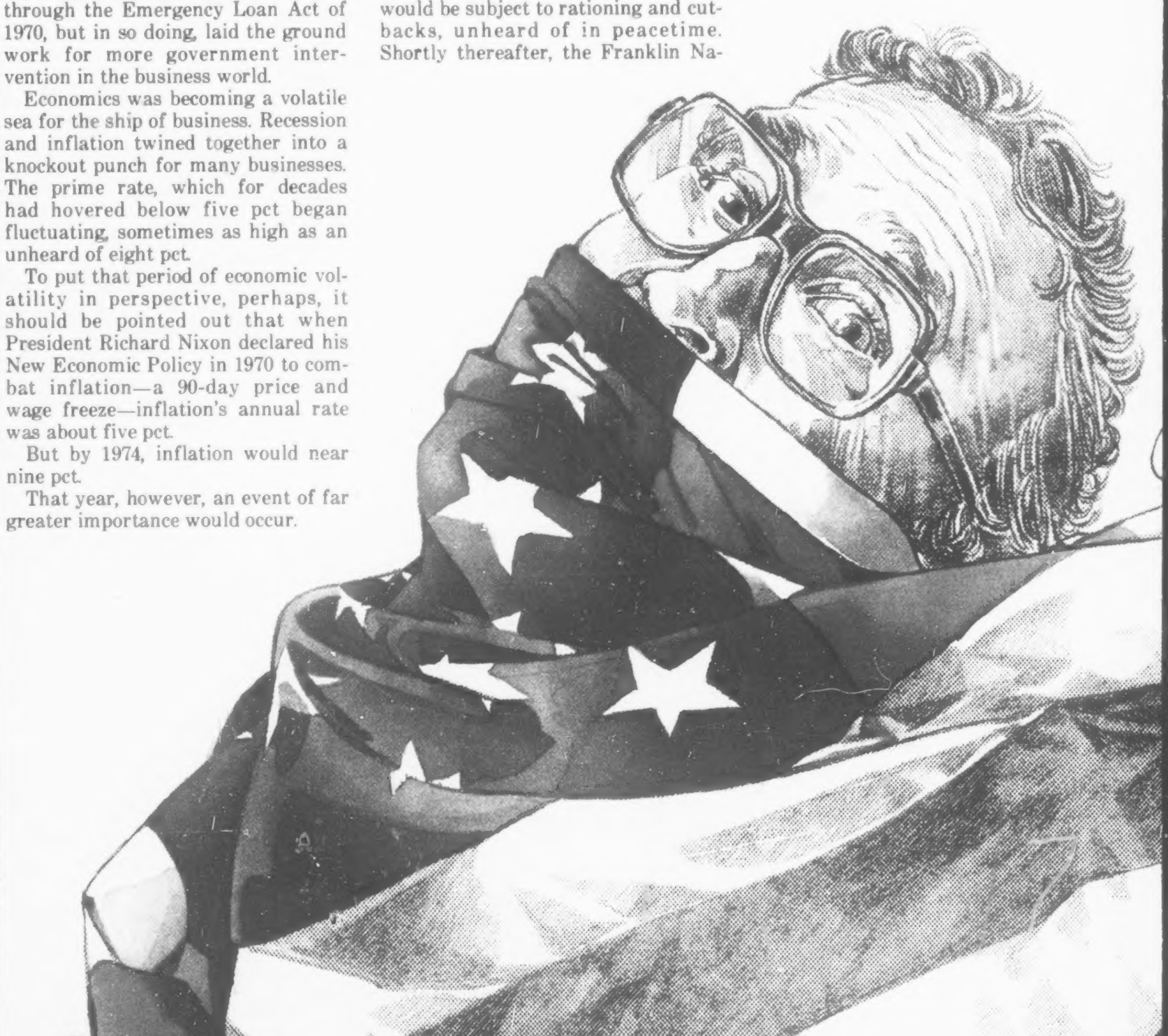
The organization of Petroleum Exporting Countries raised prices and began the so-called oil embargo of October. By December, the entire economy was in a tailspin.

The ramifications of that single event sent tremors through the financial world. The days of growth were over. The realization hit home that the U.S. was no longer the sole world economic super power, immune to the actions of other countries.

Within months, industrial users of natural gas were informed that they would be subject to rationing and cutbacks, unheard of in peacetime. Shortly thereafter, the Franklin National Bank would collapse, the largest bank failure in U.S. history—larger than any during the depression.

What did it all mean? For one thing, it meant that change was occurring at a more rapid rate than ever before. And changes 10,000 miles away could choke the very life breath out of a company.

And change at home was no slower. The wave of counter culture that was born in the sixties and grew to social consciousness in the seventies began



working its way into every aspect of the society.

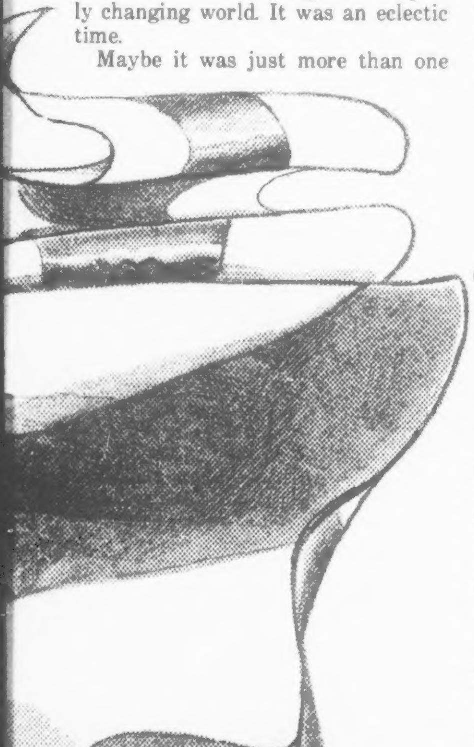
On the heels of the oil embargo, government, which might have been expected to come to their aid, filed one of the largest antitrust actions in history against the major oil companies. Similar antitrust actions were instituted against major food producers and American Telephone & Telegraph.

Moreover, government actions resulted in the convictions of numerous corporate officials in foreign bribery scandals.

OSHA and EPA, by then several years old, were testing out their new powers—powers that were growing significantly. The maturing agencies became thorns of increasing pressure in the sides of businessmen, already reeling from the confluence of rapid change.

So, perhaps, the defensive posture assumed by the corporate community can be rationalized in light of a rapidly changing world. It was an eclectic time.

Maybe it was just more than one man at the top could handle.



So, the notion of collective leadership began to gain ground. Again a trend setter, GE instituted an office of the president in 1973, but collapsed it back into a single president in 1977.

Many firms experimented with management committees, executive committees and management groups. Many still are.

The complexion of management at the very top began changing. The notion of the chief executive as monarch or jungle fighter was changing. Increasing turbulence within and without caused the nature of the organization to focus more on the political.

Disappearing was the head of an organization who could dominate on the basis of his personality, power drive or genius. It simply was too complex.

Instead, the corporate executive became a gamesman or statesman. His job was not to work alone, but to develop the necessary coalitions inside the organization among the matrix staff, or outside as well, to get the job done.

The entire post war period represented a growing schism between business and the government.

With the rising importance of such coalitions of power, the role of the corporate staff; the matrix men, obviously would grow. The powerlessness of the middle managers, conversely, would grow more acute.

But similarly, there was a terrible paradox for the new fast tracker, the corporate staffer. The role of a matrix-man violates one of the cardinal rules of management, firms would soon learn. A manager's level of authority should equal his level of responsibility.

What was happening in matrix organizations was that staff positions often were based on awesome responsibilities to the central corporate management, but the staffer had little real authority in his particular area. The successful staffers created their own authority—apparent authority—based on personality and expertise.

However, the ambiguity involved in the roles matrix-men were required to play led to short lifespans. In Geneen's ITT organization, the average career of an industry specialist was less than five years. The specialists usually would leave for jobs in other firms.

And that marked the beginning of the ascendancy of outward bound executive. For the first time, outward bound was the fast track to the top as opposed to the inside man—the old profit center fast tracker.

But the rise and fall of managers in organizations, particularly large organizations, had become much more political. It was almost parliamentary. The matrix-men survived solely on their apparent power. Once it faded—once there was a vote of no confidence—their usefulness and usually careers with that firm were ended.

It seems clear that the successful managers had to rely not simply on their particular technical expertise, but on their political saavy as well. And as the job became increasingly political, simple entrepreneurial skills were no longer adequate.

Certainly the entrepreneurial manager and the political matrix-man are not mutually exclusive. But one of the goals of the original profit center structure had been to restore to middle management the entrepreneurial atmosphere of the small organization. The later trends reduced it at those very levels.

But a growing reaction to the tyranny of the short term was developing at the matrix levels and higher in the organization. It centered around the notion of strategic planning.

Perhaps it is best explained as a natural response of the organization. Strategic planning was an outgrowth of the feeling of executives that they were riding a tiger that was out of their control and, like the Lady of Niger in rhyme, they could wind up inside the tiger.

And experience was bearing that feeling out. Some of the early leaders in that rash of corporate diversification that marked the sixties have begun to rethink their positions—positions based on those old short-term planning propositions.

Two recessions since the beginning of the seventies have been a strong impetus for those companies to reformulate policy. Recent experiences showed them that even the most broadly diversified conglomerate—with branches in what it believed were highly counter-cyclical industries—might not be immune to the blistering power of modern economic downturns.

Indeed, ITT the granddaddy of the conglomerate period, entered a period of divestiture around 1978. After the retirement of Harold Geneen in 1979, new CEO Rand V. Araskog sold off some 30 companies in the ensuing two years. Geneen had begun such moves himself in 1978, but on a smaller scale.

The moves heralded the beginning of a new awareness of what may have been fallacies in the very foundations of diversification and the accent on short term results as measured by net return on investment.

But even as a new wave sweeps management, questions arise about new problems.

The paradox of strategic planning, however, is that the times in which it evolved, highly volatile, turbulent years, are those times when it is precisely the most difficult to plan for the long term.

But its toehold has grown to a foothold in the organization. Where originally, the office of strategic planning was, more or less, a status or ego fixture in organizations, executives now are starting to listen to their planners.

Conflicts still exist. While letting short term decisions dominate the planning of a firm may be certain death in the long run, one harkens to John Maynard Keynes' caveat that, in the long run, we're all dead anyway.

And, fast track matrix men are rapidly discovering a corollary to long range planning. It is marking the end of rapid upward mobility.

In Japanese firms where strategic planning has been in place, the average manager is 10 years older than his American counterpart. The career path for the strategic planner begins in an apprentice-like stage centering on observation and study.

So if strategic planning's foothold gets larger, the utopia of the fast track matrix men may crumble.

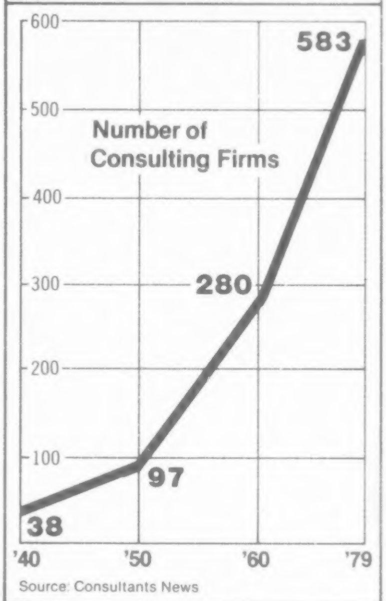
As businesses are learning, training planners is not an easy task. The foundations provided by business schools may be adequate, but additional expertise is required. And acquiring that knowledge, that judgmental ability, may take much longer than did the rapidly rising careers of the profit pushers and matrix men.

Moreover, those years would be required to add another new skill to the manager's tools—politics. The entire post-war period represented a growing schism between business and government, particularly the legislative branch.

And the importance of developing relations with government became increasingly important. Whereas before, business had relied on the outsider, the public relations specialist or the professional lobbyist, by the end of the seventies, it was becoming apparent that politics would have to be an inside job. It was too important to be entrusted to outsiders.

Instead, the firm has begun turning to outsiders for functions that used to be done internally, management consultants. While management consultants have served industry throughout the post war period, their use has skyrocketed. What's more, consulting has branched into innumerable new areas including data processing, personnel, manufacturing, accounting, marketing—literally every aspect of business.

As Industry Grew, so did its Doctors



Source: Consultants News

But few managers, be they engineer-profit pushers or MBA matrix men, are trained in the political art.

One high executive with a major oil company observed, "Everybody talks about the oil industry dominating government. It couldn't be further from the truth. These guys are totally ignorant of government and they are totally incompetent in dealing with it. They consistently have not had the ability to protect their own self interest."

But rare is the executive who can master all the tasks involved in contemporary management, technical, financial, managerial, and political.

Increasingly, top level management is being split up, for that very reason, between an inside and outside man—a chairman working with the outside and a chief executive or chief operating officer on the inside.

The outside man is becoming more of a force. Notable examples of the impact of such a position are Irving Shapiro, and Reginald Jones, the recently retired chairmen and CEOs of DuPont and General Electric.

The two men have become driving forces not only within their own corporations, but in the world of business and, increasingly, in the world of government as well.

And the effects of this latest trend may be bearing fruit. Both the publicizing and politicizing of business and management have brought its strengths and weaknesses to the public eye. America as a country is more aware of business and the economy than perhaps ever before.

Seemingly, the result of this new awareness may be a promise. The mandate of a Reagan presidency and its promise to free enterprise would seem to be both a vindication and a ray of hope for a business system facing major challenges on all fronts.

But as the post-election hoopla dies down, management is coming to realize it actually is facing a terrible test—perhaps the greatest in its history.

To the extent that government actually does free up the business system—and to the extent that the new, heightened public awareness perceives that—American business will be on trial.

For should revitalized, reindustrialized business fail to deliver, whether in reality or simply in the public eye, the results could be overwhelming. Should business fail the test, it likely will be faced with tremendous public dissatisfaction—a countermovement that could dwarf the anti-business mentality of the new deal era.

So the business system now stands on the brink of an extraordinary precipice. And at the focal point is the manager, a solitary figure ready to leap off and try his new wings, wings formed by an evolution that spans our contemporary history.

And if the wings work, the manager will soar—the system and economy with him. ☐

Management in America Part II: Reaching Out to the Worker will appear in the June 10 issue of Iron Age.

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EFFECTIVE MAR. 30, 1981

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	314	305	275	292
Buffalo	73	72	52	67
Pittsburgh	464	461	442	444
Youngstown	154	139	120	137
Cleveland	182	181	167	169
Detroit	193	183	185	190
Chicago	668	654	623	652
Cincinnati	106	114	114	93
St. Louis	101	100	90	93
Southern	265	269	254	285
Western	151	142	152	167
U.S. Production	2,671	2,620	2,474	2,589

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81, Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective March 30, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,671	2,620	31,039	30,596
Capability Utilization Rate	89.2	87.5	83.4	83.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.598	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$105.83	$107.17	$103.50	$101.17
No. 2 bundles	$ 75.50	$ 75.17	$ 73.50	$ 64.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$117.50	$117.50	$109.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	99.50
No. 1 steel, Chicago	108.50	112.50	109.50	97.50
No. 1 bundles, Detroit	106.50	106.50	101.50	105.50
Low Phos., Youngstown	113.50	113.50	104.50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	106.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	132.50	141.50

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*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective March 30, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.45-90.00	88.85-89.00	3/30/81
Lead	34.00-36.00	36.00	3/24/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	43.50-43.75	41.50-43.75	3/27/81

ALUMINUM: 99.5% ingot. COPPER (C) cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz.	$526.50
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$410-$420
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$12.20
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Mar. 23—606.58
Mar. 24—612.52
Mar. 25—612.54
Mar. 26—611.16
Mar. 27—614.44

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs. add 1¢ per lb)

	Solids	Turnings
Copper	84	75¼
Yellow brass	71	65⅞
Red brass	77¼	70¾
Comm. bronze	79	72¼
Mang. bronze	69	67¼
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	71
Light copper	62

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	77
No. 2 copper wire	67
Light copper	58
No. 1 composition	70
No. 1 comp. turnings	68
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	32
Radiators	52

Aluminum

New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAR. 30, 1981

(Effective March 30, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$117.00 to $118.00
No. 2 hvy. melting	107.00 to 108.00
No. 1 dealer bundles	128.00 to 129.00
No. 1 factory bundles (auto)	129.00 to 130.00
No. 2 bundles	81.00 to 82.00
No. 1 busheling	128.00 to 129.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	100.00 to 101.00
No. 1 RR hvy. melting	124.00 to 125.00
Rails, 2 ft. and under	133.00 to 134.00
Scrap rails, random lgth.	115.00 to 116.00
RR specialties	130.00 to 131.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 730.00
18-8 turnings	615.00 to 620.00

Chicago

No. 1 hvy. melting	$108.00 to $109.00
No. 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	124.00 to 125.00
No. 1 factory bundles (auto)	132.00 to 133.00
No. 2 dealer bundles	84.00 to 85.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	115.00 to 116.00
Shredder scrap	112.00 to 113.00
Machine shop turn.	54.00 to 55.00
Mixed bor. and turn.	55.00 to 56.00
Shoveling turnings	58.00 to 59.00
Cast iron borings	72.00 to 73.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No.1 RR hvy. melting	114.00 to 115.00
Scrap rails, random lgth.	108.00 to 109.00
Reroller rails	136.00 to 137.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	130.00 to 131.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	109.00 to 112.00
Shredder scrap	103.00 to 106.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	88.00 to 91.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars.

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	83.00 to 84.00
No. 1 dealer bundles	106.00 to 107.00
No. 2 bundles	54.00 to 55.00
No. 1 busheling	103.00 to 104.00
Drop forge flashings	91.00 to 92.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	110.00 to 111.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	74.00 to 75.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	113.00 to 114.00
Electric furnace bundles	113.00 to 114.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	105.00 to 106.00
Machine shop turn.	34.00 to 35.00
Mixed bor. and turn.	34.00 to 35.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	34.00 to 35.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	105.00 to 106.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 busheling	84.00 to 85.00
No. 1 dealer bundles	82.00 to 83.00
No. 2 dealer bundles	49.00 to 50.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	110.00 to 111.00
Structural and plate, 2 ft. and under	118.00 to 119.00
Rails, 2 ft. and under	96.00 to 97.00
Scrap rails, random lgth.	76.00 to 77.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	101.00 to 102.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 99.00 to $100.00
No. 2 heavy melting	90.00 to 91.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	106.00 to 107.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	98.00 to 99.00
Elec. furnace, 3 ft. & under	90.00 to 91.00
Structural and plate, 2 ft.	115.00 to 116.00
Structural and plate, 4 ft.	111.00 to 112.00
No. 1 RR hvy. melting	98.00 to 99.00
Scrap rails, random lgth.	99.00 to 100.00
Rails, 18 in. and under	118.00 to 119.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 84.00 to $ 85.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	60.00 to 61.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	127.00 to 128.00
Rails, random length	101.00 to 102.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	82.00 to 83.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	66.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$ 76.00 to $ 78.00
No. 2 hvy. melting	67.00 to 69.00
No. 1 dealer bundles	90.00 to 92.00
No. 2 bundles	40.00 to 42.00
No. 1 busheling	90.00 to 92.00
Shredder scrap	86.00 to 88.00
Machine shop turn.	14.00 to 16.00
Shoveling turnings	26.00 to 28.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	68.00 to 70.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	98.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	50.00 to 51.00
Shredder scrap	107.00 to 108.00
Cut structural plate 2 ft. and under	124.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00

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THE MAGAZINE FOR METALWORKING MANAGEMENT

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HOW THE COMPUTER CAN HELP

IRON AGE

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APRIL 27, 1981

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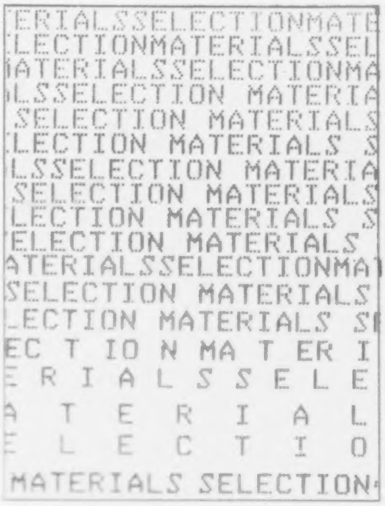

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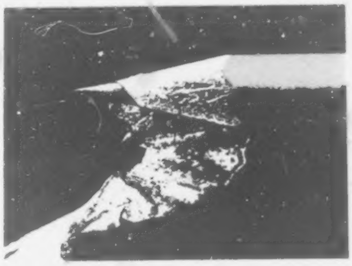


1980 metal industries financial analysis

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

BUSINESS FEATURES

MEXICO'S TAKING THE WELL-OILED ROUTE TO INDUSTRIALIZATION

The Latin American oil producer has decided to recycle its petrodollars to build a strong industrial base for the nation.

By Susan T. Parker

"Nationality springs from the fact of birth. To belong to a nation is to be born of a certain blood, to be born on a certain soil. From this blood and soil emanate the identity of a people, their culture, their language, and their common history, the pride of triumph and the sorrow of defeat."

These words were written by Mexican President Jose Lopez Portillo about four years ago and they reveal the respect and pride the country has in its Hispanic-Indian roots and its land. They also point up the resiliency of Mexico, a country that has been fighting for its independence and self-determination since the early 1800s.

Now, for the first time in its history, Mexico has a chance to take control of its destiny, because of its vast oil and natural gas reserves. "We are a new, vibrant and nationalistic society that has come of age," remarked Carlos Beeche Stevenson, vice president of Houston-based Hooker Chemical Corp. and Director General of Quimica Hooker, S. A. in Mexico.

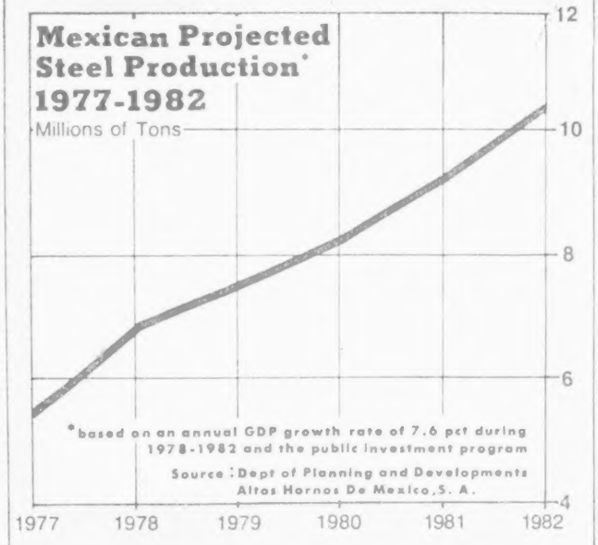
And come of age, it has. In 1980, the country's oil profits were estimated at $18 billion, more than double its initial expectations. If the oil activity continues, Mexico's GNP is expected to grow at an average rate of 7-8 pct in 1982.

But Mexican officials recognize that the importance of the nation's oil lies not in the money it it pouring into the country, but in its ability to change the size of Mexico's growth potential.

So, to avoid the mistakes of other major oil exporting nations, Mexico has decided to recycle its petro dollars and build a strong infrastructure and industrial base to support its oil industry. In addition, Mexico sees its oil export dollars as a means to improving its international relations and lessening its dependence on outside financing.

At the moment, Mexico is a veritable hotbed of economic activity. The country is infusing billions of dollars into nearly every one of its industries,

Volkswagen, Mexico's largest automaker, has mounted a $600 million capital investment program for its operations in that Latin American nation during the next decade.

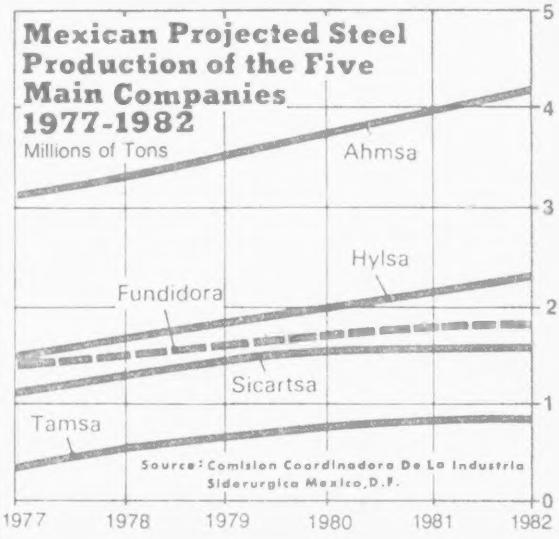


Mexican Projected Steel Production* 1977-1982

Millions of Tons

*based on an annual GDP growth rate of 7.6 pct during 1978-1982 and the public investment program

Source: Dept of Planning and Developments Altos Hornos De Mexico, S. A.



Mexican Projected Steel Production of the Five Main Companies 1977-1982

Millions of Tons

Source: Comision Coordinadora De La Industria Siderurgica Mexico, D.F.

including capital goods, steel, automotive, machine tools and construction. Needless to say, U.S., European and Japanese companies are all trying to capitalize.

A priority investment is the production of capital goods used in oil refining, basic petrochemical production, transportation and in the distribution of hydrocarbons in Mexico. A report issued by The Planning Economics Group, Boston, Inc., Woburn, Mass., estimates that the Mexican oil industry's capital goods requirements between 1977-1986 will be about $4.2 billion. Investments in support facilities, infrastructure and oil-related consumer goods will account for another $5.1 billion.

"In order of their importance, steel pipelines, compressors, pressure vessels, heat exchangers and valves are items in great demand" by Mexico's oil industry, the report noted. The total capital outlay required for the items between 1977-1986 is estimated at about $2.7 billion.

The future growth potential of the nation's automotive industry is equally good. It is expected to expand at a rate of 11 pct per year over the next five years, the Boston report said. About $2 billion in expansions have already been announced by automakers in Mexico. By 1982, the auto industry could be second only to the oil industry in its ability to earn foreign exchange for Mexico, the report added.

Oddly enough, the auto industry in Mexico is very similar to that in the U.S. The only difference is that the Mexican operations are turning out profits.

"The Mexican automobile market is the fastest growing in the world," according to a report issued by the Office of the U.S. Special Trade Representative due to be released in July. In 1979, the industry grew at a rate of 14.5 pct and accounted for 4.6 pct of the Mexican GNP that year. By next year, it is expected to account for 6.2 pct of the country's GNP. Furthermore, the auto industry's 1979 production level of 427,500 finished vehicles should double by 1985, according to the report.

The auto market's substantial growth along with the Mexican government's emphasis on the export market has spurred considerable investment activity.

Chrysler currently is building a $110 million 4-cylinder engine plant in Saltillo "to meet Mexico's content requirement." The 440,000 sq. ft. plant is expected to be on line by this summer. Chrysler, which has a 22.8 pct share of the Mexican auto market, is also spending $150 million to expand its two vehicle assembly plants in Mexico City and Tolucca.

General Motors, which has about 13 pct of the market, has announced plans to spend over $350 million on several projects, including a new V-6 engine and passenger car assembly plant near Saltillo. The plant is expected to be completed by mid-1982 and will have the capacity to build 1,600 engines daily, says George B. Schreck, GM's manager of overseas public relations in Latin America.

Ford Motor is involved in four joint venture projects with Mexican partners. Among them are a $52 million aluminum engine head plant near Monterrey, a $44 million plant in Mexico City to produce Ford Ltd. cars and trucks, and a $44 million plant to manufacture automotive safety glass. The auto firm has also announced plans to build a $365 million 4-cylinder engine plant in Chihuahua. Of the $365 million, about $150 million is expected to be spent for tooling and equipment outside of Mexico, primarily in the U.S.

Last October, Ford opened a $42 million auto assembly plant at its Cuautitlan complex near Mexico City. The new plant, which can produce an estimated 21,000 cars per year, raised Ford combined car and truck capacity in Mexico by 29 pct.

Volkswagen has mounted a $600 million capital investment program for its Mexican operations during the next decade. This will include a new engine plant scheduled to come on line at its Puebla complex this year. The plant will be capable of producing 1,600 engines daily, of which 75 pct will be exported to U.S. assembly facilities.

Nissan Mexicana says it plans to spend about $200 million on expansion projects in Mexico during the next four years. In Mexico, however, Nissan faces a precarious situation. Unlike the other major auto firms in Mexico, it lacks a U.S. facility to which it can export components. This limits the Japanese firm's sales of Datsuns in Mexico, because the Mexican government requires that domestic sales be matched by export sales.

This situation, combined with the already tense U. S.-Japanese trade relations, could lead to the establishment of a Nissan plant in the

U.S., according to the Special Trade Representative's report.

Another area targeted for growth is the auto parts manufacturing industry. Investments in new expansions between now and 1982 are pegged at $1.6 million.

Much of the growth in Mexico's auto industry over the past few years can be traced back to the government's plan to make the automotive industry a key element in the country's industrialization efforts.

To achieve its plan, Mexico had to devise ways to spur domestic growth, heighten export activity and promote the Mexicanization of industry. It accomplished its goal by using a carrot-and-stick approach. Mexico set down strict guidelines (particularly on imports) for the auto industry in 1977. Those firms that complied were offered generous tax rebates, investment grants and loosened workplace safety and environmental restrictions.

Mexico's auto industry does have its problems, though. Its auto parts industry, according to one report, is characterized by insufficient supplies, poor quality products, production inefficiencies and high prices.

The return on investment is low, because car prices in Mexico are about 50 pct higher than international prices. This is mainly due to the high cost of Mexican-produced components and parts.

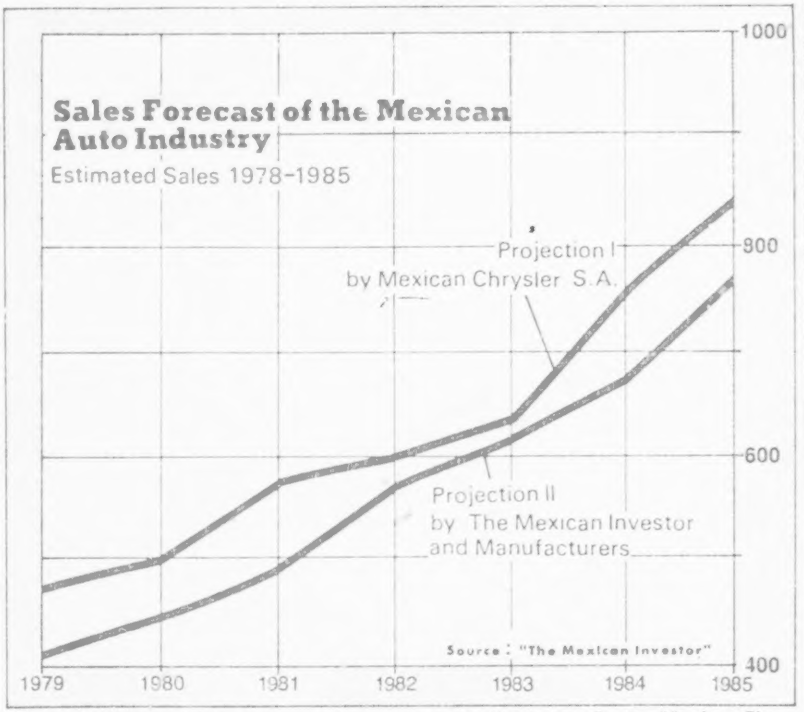
Not unlike U.S. companies, Mexico has had its share of labor unrest. In the last seven years, GM's plant in Mexico City has been shut down seven times by strikes, including a four-month work stoppage in 1980.

Another constraint is Mexico's transportation system, or lack of it. Due to its outdated rail system, auto components must be moved domestically by trucks, causing production delays.

But despite its problems, the Mexican automotive industry has one of the highest growth rates in the world. This is good news for Mexico, but not for U.S. auto workers, who see the increased participation of the Big Three U.S. auto manufacturers in the Mexican market as a threat to their jobs.

The automakers view the situation differently. "These plants (in Mexico) support jobs in the United States, because without them, we could not export out of the U.S.," said GM's Mr. Schreck.

Construction is turning out to be another fast-paced industry in Mexico. The Mexican government has greatly increased its outlays for the construction of roads, irrigation ditches and homes. Ultimately, such actions will have a cascading effect on the U.S. construction equipment industry.



Sales Forecast of the Mexican Auto Industry

Estimated Sales 1978–1985

Source: "The Mexican Investor"

International Harvester's Construction Equipment Group, Schaumburg, Ill., is projecting a 7 to 10 pct annual growth rate in Mexico's construction equipment market. In 1980, Mexico imported almost $368 million in construction equipment from the U.S. To capture its share of the expanding market, IH went into partnership last March with Banimex, the second largest bank in Mexico, and formed Minter S.A. de CV. IH holds a 49 pct interest in the firm but maintains operational control.

The partnership establishes International Harvester as the manufacturer of the largest line (11 products) of Mexican-made construction equipment. A plant will be built about 150 miles northwest of Mexico City and is expected to start up in mid-1982.

"Through Minter, our share of the Mexican crawler and rubber tire loader market could grow to as much as 35 pct by 1985," a company spokeswoman says.

International Harvester is also involved in another joint venture, Maquimex, with a group of Mexican investors. The plant, in which International Harvester holds a 40 pct interest, is located in Mexico City and manufactures hydraulic excavators.

Two years ago, International Harvester's Truck Group purchased a 40 pct interest in Fadrica de Autotransportes Mexicana S. A., Mexico City. The company produces and markets medium and heavy model trucks and also manufactures some diesel engines.

A company spokesman estimates that FAMSA has a 31 pct share of Mexico's heavy duty truck market and 10 pct share of the medium truck market.

Similarly, Caterpillar Mexicana S. A., Monterrey, entered into a joint venture with CYDSA Group of Monterrey last July and formed a company called Conek to manufacture tractors and earthmoving equipment.

Mexico's steel sectors, both private and public, are in the midst of quite ambitious expansion plans. Currently, the steel industry is investing $3.85 million for expansion; this is to grow to $23.74 million in the next decade in hopes that the industry can reach the goal of 21 million tons a year of installed capacity by 1990. This would then reduce Mexico's steel imports from the U.S., which were over 1.2 million tons in 1980.

Specifically, Sidermex S.A. de CV, a government entity overseeing the three state-owned steel companies, plans to spend $17.2 billion in the 1980s to increase its current production from 4.5 million tons per year to 21 million tons per year. Most of the added capacity will be installed at Siderurgica Lazaro Cardenas—Las Truchas S.A., Mexico's newest integrated steel mill, and at Siderurgica

(Cont. on p. 28)

(Cont. from p. 25)

III, a new steel facility to be located at Tampico on the Gulf Coast.

Sidermex is also investing $170 million to increase the capacity of Altos Hornos de Mexico S.A. (AHMSA), the country's largest steelmaker, and another $230 million at Funidora Monterrey S.A.

Mexico's privately-owned steel companies have also caught investment fever.

Hojolatay Lamina S.A. (Hylsa), the country's largest privately-owned steel producer, plans to invest $707 million over a three-year period. That outlay is aimed at doubling the production of flat steel to 1.6 million tons per year at its Monterrey plant. Hylsa, a division of the Alfa Industrial Group in Mexico, is also building a 250,000 ton direct reduction plant in Altimira as part of a joint venture with Japanese investors.

Tubos de Acero de Mexico S.A. (TAMSA) plans to spend about $75 million a year through 1985 to reach a capacity of 1 million tons of pipe per year.

All this money is keeping a lot of U.S. and foreign businessmen quite happy and busy. Philip Berg, executive vice president of Pittsburgh-based Dravo Corp., said his company currently is designing and building an iron ore pellet plant, an iron ore slurry pipeline and an iron ore concentrator for AHMSA.

The three iron ore facilities combined translate into more than $100 million in work, said Mr. Berg, adding that this was Dravo's first major project in Mexico.

Karl Bleimann, president of Korf & Fuchs, Salisbury, N.C., said his firm netted about $500,000 from the sale of a water-cooled roof and wall system to TAMSA for its new electric furnaces. "This was our first time doing business in Mexico and hopefully it's not the last time," he remarked.

Under Mexican rules, a firm doing business in Mexico can not import an item that is available on the Mexican market.

"In terms of new orders, Mexico has become a significant part of our business," said Frank Jones, executive vice president in charge of the machine tool group, Giddings & Lewis, Fond du Lac, Wis. He estimated that his company did over $5 million of machine tool business with Mexico in 1980.

According to the Department of Commerce, U.S. sales of machine tools and metalworking equipment to Mexico were over $208 million in 1980.

For machine tools, "product acceptance in Mexico is extremely good in three important markets—energy, auto, construction and heavy equipment," Mr. Jones said.

"We understand Mexico to be a strongly developing market for machine tools," noted Phil James, vice president of marketing for the production machinery division, Ingersoll Milling Machine, Rockford, Ill. In fact, his firm just supplied stand alone and transfer machinery to Chrysler's operations in Mexico.

"Almost everything under the sun in machine tools will soon be needed" in Mexico, said a spokesman for Cross & Trecker, Inc., Bloomfield Hills, Mich. The firm recently captured a $20 million contract to supply transfer lines for the machining of engine blocks at Ford's Mexican operations.

The investments continue to roll on. In fact, it has gotten to the point where some industry observers are comparing Mexico of the '80s to Japan of the '60s. ☐

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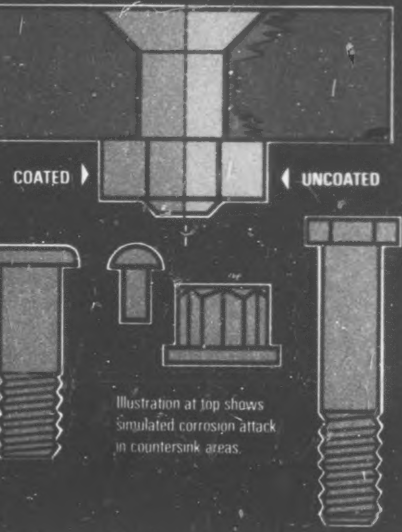

Illustration at top shows simulated corrosion attack in countersink areas.

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For Information, Circle 114

Capital spending will go up again in '81

Actual capital spending and appropriations to spend by the nation's 1,000 largest manufacturers increased in 1980 over 1979. And both are likely to increase this year over last.

So reports the Conference Board in its latest appraisal of capital appropriations and capital spending by the country's largest manufacturers.

Says the board, "Appropriations last year (1980) seem to have been only mildly restrained by the recession. Overall appropriations totaled $104.7 billion in 1980, up 18.2 pct over 1979. This compares with a 31.8 pct jump in 1979.

"The giant petroleum industry," the Board notes, "was a major factor in the strong showing last year. But even excluding petroleum, appropriations registered a 4.6 pct gain over the year-earlier figure.

"Actual capital spending by the 1,000 largest manufacturers was up 21.4 pct in 1980 after climbing 25.3 pct in 1979," the Board concludes.

It should be remembered that all these increases are in current, inflated dollars. When the translation into constant (real) dollars is made, one of the gains is shaved and the other reverts to a loss.

Capital Appropriations

	4th Q '79 to 4th Q '80	3rd Q '80 to 4th Q '80
Durable Goods	—3.3	19.2
Iron and Steel	—9.7	12.8
Nonferrous	26.0	—36.4
Elect. Machinery and Equipment	—10.4	2.7
Nonelectrical Machinery	26.6	43.4
Motor Vehicles and Equipment	—29.9	51.6
Fabricated Metals	7.6	23.8
All Manufacturing	11.2	6.6

Source: The Conf. Board

For example, actual capital spending by all manufacturers except petroleum was up 18 pct in '80. But assuming an annual inflation rate of 10 pct that increase was only about 8 pct in real terms.

What happens to appropriations is more drastic. These rose 5 pct in current dollars terms in '80 over '79. But, again, assuming inflation of 10 pct they actually fell 5 pct from '79 levels.

What's going to happen to appropriations and spending this year?

"The outlook calls for continued growth in both," the Board states. "Surveyed companies expect their appropriations to rise about 6 pct in 1981 and their spending to climb about 17 pct.

"The petroleum industry," it's added, "is headed for another big spending year. Oil companies expect their overall capital spending to rise by almost 30 pct, which would nearly match last year's 34.1 pct hike. But their appropriations are expected to rise only 5 pct."

In actual capital spending most metals and metalworking industries were up in '80 over '79. (It should be remembered that only the 1,000 largest manufacturers are included in the survey. Therefore the figures do not represent total capital spending by, say, all steelmakers or all nonferrous producers.)

Nevertheless spending by large prime iron and steel producers in '80 was $3.4 billion, up from $3.2 billion in '79. Nonferrous producers spent $2.6 billion in '80 as opposed to $1.6 billion in '79. Fabricated metals spending dropped a bit to $1.5 billion, down from $1.6 billion.

For durable goods makers as a whole spending was up—$66 billion as against $56 billion in '79.

As the table here indicates the pattern of appropriations by metals and metalworking industries shows a mixed pattern when comparing fourth quarter '79 with fourth quarter '80 or third quarter '80 with the quarter which ended last December.

Federal borrowings dent money market

The pressure of Federal borrowing on the credit markets will ease a bit in fiscal year '82—but not much.

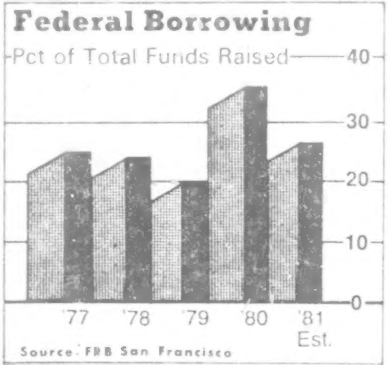
So says the Federal Reserve Bank of San Francisco. After assessing the situation it concludes, "According to the new Administration's estimates, the budget deficit in fiscal 1982 will again be quite high, while off-budget and Federally-assisted borrowing will continue close to 1981 levels.

"Consequently, credit markets may remain under pressure as public and private demands compete for available funds."

The San Francisco Fed points out how the government's thrust into the money markets has grown in recent years. (See chart.)

The bank states, "The government's participation in credit markets—the proportion of funds raised by the Federal government and its assisted entities—has trended upwards over the past decade. That proportion increased from a 15.9 pct average during the 1971-74 period to 25.6 pct during 1977-80. This fiscal year, the government might again account for *more than one-fourth* of total borrowings."

San Francisco Fed notes that the government's budget deficits—however large—are but one section of the Federal borrowing iceberg.



Source: FRB San Francisco

"The budget deficit this fiscal year," says the bank, "will probably be close to $55 billion.

"However," it's added, "that figure represents only a part of the total amount which the Federal government will have to finance this year. In addition to the budget deficit (sometimes called the on-budget deficit), financing will be needed to cover the government's 'off-budget' deficit of roughly $20 billion. The Treasury may finance a small part of this combined $75 billion deficit by reducing its cash balance, but the bulk—about $70 billion—will have to be obtained from public borrowings."

And, the bank indicates, the Federal presence in the credit markets is even greater than the figure represented in the budget and off-budget deficits. "Also operating in the markets," it's noted, "are government-sponsored enterprises and mortgage pools, which could boost total Federally related borrowings to about $112 billion in the current fiscal year."

The bank then explains what is involved in off-budget entities. "In the early 1970s," it says, "Congress excluded the transactions of certain Federally owned and controlled entities from the on-budget totals.

"The total net loans, or outlays, of these lending agencies represent the off-budget deficit, which rose from $1.4 billion in fiscal 1974 to $14.0 billion in fiscal 1980.

METALWORKING ORDER TRENDS

Orders continue on a plateau, but at least it is a high one

Perhaps, the best word or term to sum up the recent situation in durable goods new orders is 'lackluster.'

Start with a look at the latest month of complete data on orders—February. The table here shows durables orders rising from $81.3 billion in January to $81.5 billion in February. That, of course, represents some rounding out. Actually, orders in February were up by only $117 million, or about .2 pct. This, according to Commerce Dept. analysts, means that orders were "virtually unchanged" from January.

The analysts should have said that the flow of orders received by durable goods producers was virtually unchanged from the start of last year. In January of last year, dollar volume of orders matched this February's total almost to the dollar.

If an allowance is made for inflation, then orders from the start of last year were down in February of this year by about 7 pct. And early 1980 was by no means the cyclical peak for durables new orders.

When a check is made of that component of durable goods—metals and metalworking industries—it is found that orders to these industries in real terms in February were down 8 pct from the opening of 1980.

Still, in February there was some upward movement in durables orders. On a month-to-month basis, orders were up for producers of primary metals and fabricated metal products. The big move up was made in orders for steel. These rose by 17.5 pct in February to $6.1 billion.

On a monthly change basis, the sad and bad news in February was in orders for nonelectrical machinery. These fell by 7.1 pct to $15.4 billion.

The really soft spot in February was in orders received by producers of non-military capital goods. These orders were down from January by 16.2 pct to $20.5 billion. That was the steepest month-to-month decline in almost 10 years. There was an 18.3 pct decline in July of 1971.

Rub the present orders picture hard enough and a bright side appears: That is the point that this latest flat trend line of orders is still pegged at a high level. The $81.4 billion monthly order average for the past five months is a lot better than the $68.7 billion per month average in the second quarter last year.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr	Previous Month or Qtr	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	1st Qtr.	$310.6	$295.0	$291.9
Manufacturing, Total	1st Qtr.	122.7	115.4	111.8
Manufacturing, Durable Goods	1st Qtr.	60.2	57.4	58.3
Mining Industry	1st Qtr.	16.1	15.3	11.9
Key Indicators, Durable Goods Manufacturing				
New Orders	Feb.	81.5	81.3	81.0
Shipments	Feb.	80.8	80.3	79.2
Inventories	Feb.	166.1	164.9	155.3
Unfilled Orders	Feb.	281.5	280.8	273.3
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Feb.	20.5	24.5	21.5
Capital Goods Producers, Defense Industries	Feb.	5.5	4.2	3.7
Primary Metals, Total	Feb.	12.3	11.0	13.1
Steel (SIC 331)	Feb.	6.1	5.2	5.9
Iron & Steel Castings (SIC 332)	Feb.	1.1	1.1	1.2
Nonferrous Metals	Feb.	5.1	4.7	6.0
Nonelectrical Mach.-Equip. Industries, Total	Feb.	15.4	16.5	14.2
Engines & Turbines	Feb.	1.2	1.7	1.0
Farm Machinery & Equipment (Shipments)	Feb.	1.1	1.2	1.1
Construction, Mining & Materials Hdlg. Equip	Feb.	3.1	3.2	3.0
General Industrial Machinery	Feb.	1.1	1.4	1.1
Fluid Power Equipment** (Index-1972=100)	Feb.	265	269	323
Metalworking Machinery	Feb.	.7	1.0	1.1
Machine Tools, Total (Millions $, Unadjusted)	Feb.	276.7	281.0	501.0
Machine Tools, Metal-Cutting***	Feb.	212.5	206.6	401.9
Machine Tools, Metal-Forming***	Feb.	64.5	74.4	99.1
Electrical Mach. & Equip. Industries, Total	Feb.	11.6	11.4	11.4
Elec. Transmission Equip. & Industrial Apparatus	Feb.	1.8	1.9	1.9
Household Appliances	Feb.	1.3	1.3	1.2
Communication Equipment	Feb.	3.6	3.8	3.6
Transportation Equip. Industry, Total	Feb.	15.3	16.2	16.0
Motor Vehicles & Parts (Shipments)	Feb.	9.3	9.1	9.9
Aircraft, Missiles & Parts	Feb.	4.0	5.5	4.4
Shipbuilding & Military Tanks	Feb.	1.1	.9	.7
Fabricated Metal Products, Total	Feb.	10.0	9.7	10.2
Instruments, Total	Feb.	3.8	3.8	3.8

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

EFFECTIVE APR. 6, 1981

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	299	314	301	292
Buffalo	74	73	52	67
Pittsburgh	444	464	455	444
Youngstown	154	154	121	137
Cleveland	185	182	174	169
Detroit	181	193	185	190
Chicago	648	668	650	652
Cincinnati	117	106	114	93
St. Louis	100	101	94	93
Southern	258	265	257	285
Western	155	151	148	167
U.S. Production	2,615	2,671	2,551	2,589

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81, Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81

Steel Production, Composite Prices

(Effective April 6, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,615	2,671	33,654	33,131
Capability Utilization Rate	87.4	89.2	83.7	83.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.598	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$104.17	$105.83	$102.83	$101.17
No. 2 bundles	$ 75.50	$ 75.50	$ 72.83	$ 64.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$114.50	$117.50	$110.50	$106.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	99.50
No. 1 steel, Chicago	106.50	108 50	106.50	97.50
No. 1 bundles, Detroit	108.50	106.50	106.50	105.50
Low Phos., Youngstown	113.50	113.50	104 50	117.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	106.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	141.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago

Nonferrous Prices

(Effective April 6, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	87.85-90.00	88.30-90.00	4/ 6/81
Lead	36.00	34.00-36.00	4/ 1/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	43.50-43.75	41.50-43.75	3/27/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$533.75
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$410-$420
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$12.27
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Mar. 30—613.55
Mar. 31—616.35
April 1—612.72
April 2—615.15
April 3—614.77

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	84	75¼
Yellow brass	7[illegible]	65⅞
Red brass	77¼	70¾
Comm. bronze	79	72¼
Mang. bronze	69	67¼
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	81
No. 2 copper wire	71
Light copper	62

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	77
No. 2 copper wire	67
Light copper	58
No. 1 composition	70
No. 1 comp. turnings	68
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	32
Radiators	52

Aluminum

New mixed clips	39	—40
Old sheet	35	—36
Old cast	35	—35
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

(Effective April 6, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$114.00 to $115.00
No. 2 hvy. melting	104.00 to 105.00
No. 1 dealer bundles	127.00 to 128.00
No. 1 factory bundles (auto)	129.00 to 130.00
No. 2 bundles	81.00 to 82.00
No. 1 busheling	126.00 to 127.00
Machine shop turn.	39.00 to 40.00
Shoveling turnings	65.00 to 66.00
Cast iron borings	64.00 to 65.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	104.00 to 105.00
No. 1 RR hvy. melting	124.00 to 125.00
Rails, 2 ft. and under	133.00 to 134.00
Scrap rails, random lgth.	115.00 to 116.00
RR specialties	130.00 to 131.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 730.00
18-8 turnings	615.00 to 620.00

Chicago

No. 1 hvy. melting	$106.00 to $107.00
No. 2 hvy. melting	99.00 to 100.00
No. 1 dealer bundles	122.00 to 123.00
No. 1 factory bundles (auto)	132.00 to 133.00
No. 2 dealer bundles	84.00 to 85.00
Unburned bundles	69.00 to 70.00
No. 1 busheling	113.00 to 114.00
Shredder scrap	112.00 to 113.00
Machine shop turn.	54.00 to 55.00
Mixed bor. and turn.	55.00 to 56.00
Shoveling turnings	58.00 to 59.00
Cast iron borings	72.00 to 73.00
Low phos. forge crop	129.00 to 130.00
Low. phos. punchings plate ¼ in. and heavier	137.00 to 138.00
Low phos. 2 ft. and under	132.00 to 133.00
No. 1 RR hvy. melting	112.00 to 113.00
Scrap rails, random lgth.	106.00 to 107.00
Reroller rails	136.00 to 137.00
Rails, 2 ft. and under	139.00 to 140.00
RR couplers and knuckles	129.00 to 130.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	130.00 to 131.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	550.00 to 560.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 90.00 to $ 93.00
No. 2 hvy. melting	79.00 to 82.00
No. 1 dealer bundles	111.00 to 114.00
No. 2 dealer bundles	59.00 to 62.00
No. 1 busheling	109.00 to 112.00
Shredder scrap	103.00 to 106.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	69.00 to 72.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	126.00 to 129.00
RR specialties	106.00 to 109.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	88.00 to 91.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	120.00 to 123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to $ 86.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	105.00 to 106.00
Drop forge flashings	83.00 to 84.00
Machine shop turn.	47.00 to 48.00
Mixed borings and turn.	43.00 to 44.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	110.00 to 111.00
Stainless	
18-8 bundles and solids	680.00 to 690.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	165.00 to 175.00

Youngstown

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	74.00 to 75.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	113.00 to 114.00
Electric furnace bundles	113.00 to 114.00
Galvanized bundles	100.00 to 101.00

Cleveland

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles	118.00 to 119.00
No. 2 bundles	50.00 to 51.00
No. 1 busheling	105.00 to 106.00
Machine shop turn.	34.00 to 35.00
Mixed bor. and turn.	34.00 to 35.00
Shoveling turnings	48.00 to 49.00
Cast iron borings	34.00 to 35.00
Cut structural & plates, 2 ft. and under	135.00 to 136.00
Low phos. punchings plate	135.00 to 136.00
Drop forge flashings	69.00 to 70.00
Foundry steel, 2 ft. & under	105.00 to 106.00
No. 1 RR hvy. melting	120.00 to 121.00
Rails, 2 ft. and under	140.00 to 141.00
Rails, 18 in. and under	141.00 to 142.00
Steel axle turnings	81.00 to 82.00
Railroad cast	135.00 to 136.00
No. 1 machinery cast	135.00 to 136.00
Cupola cast	115.00 to 116.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	600.00 to 610.00
18-8 turnings	475.00 to 500.00
430 bundles	150.00 to 160.00

Buffalo

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	65.00 to 66.00
No. 1 busheling	84.00 to 85.00
No. 1 dealer bundles	82.00 to 83.00
No. 2 dealer bundles	49.00 to 50.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	110.00 to 111.00
Structural and plate, 2 ft. and under	118.00 to 119.00
Rails, 2 ft. and under	96.00 to 97.00
Scrap rails, random lgth.	76.00 to 77.00
No. 1 machinery cast	116.00 to 117.00
No. 1 cupola cast	84.00 to 85.00

St. Louis

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	86.00 to 87.00
Foundry steel, 2 ft.	86.00 to 87.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	81.00 to 82.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	98.00 to 99.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 99.00 to $100.00
No. 2 heavy melting	90.00 to 91.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	99.00 to 100.00
Shredder scrap	106.00 to 107.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	49.00 to 50.00
Electric furnace bundles	98.00 to 99.00
Elec. furnace, 3 ft. & under	90.00 to 91.00
Structural and plate, 2 ft.	115.00 to 116.00
Structural and plate, 4 ft.	111.00 to 112.00
No. 1 RR hvy. melting	98.00 to 99.00
Scrap rails, random lgth.	99.00 to 100.00
Rails, 18 in. and under	118.00 to 119.00
Angles and splice bars	109.00 to 110.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	75.00 to 76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 84.00 to $ 85.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 bundles	60.00 to 61.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	127.00 to 128.00
Rails, random length	101.00 to 102.00
Rails, 2 ft. and under	122.00 to 123.00
No. 1 cupola cast	82.00 to 83.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	108.00 to 109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to $ 53.00
No. 2 hvy. melting	47.00 to 48.00
No. 2 dealer bundles	42.00 to 44.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	9.00 to 11.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	68.00 to 69.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	660.00 to 680.00
18-8 turnings	560.00 to 580.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to $ 78.00
No. 2 hvy. melting	67.00 to 69.00
No. 1 dealer bundles	88.00 to 90.00
No. 2 bundles	40.00 to 42.00
No. 1 busheling	88.00 to 90.00
Shredder scrap	86.00 to 88.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	24.00 to 26.00
No. 1 machinery cast	140.00 to 145.00
Mixed cupola cast	68.00 to 70.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	70.00 to 72.00
No. 1 dealer bundles	65.00 to 67.00
No. 2 dealer bundles	50.00 to 52.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to $ 74.00
No. 2 hvy. melting	62.00 to 64.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	42.00 to 44.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to 114.00
No. 1 cupola cast	118.00 to 120.00

Seattle

No. 1 hvy. melting	$ 94.00 to $ 96.00
No. 2 hvy. melting	83.00 to 85.00
No. 2 bundles	70.00 to 72.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

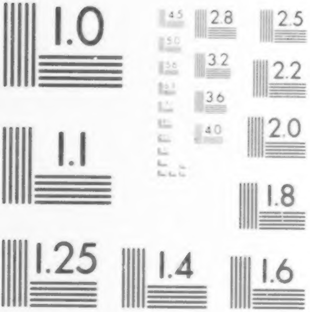
Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to $108.00
No. 2 hvy. melting	99.00 to 100.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	26.00 to 27.00
Crushed turnings	50.00 to 51.00
Shredder scrap	107.00 to 108.00
Cut structural plate 2 ft. and under	124.00 to 125.00
Unstripped motor blocks	89.00 to 90.00
Cupola cast	106.00 to 107.00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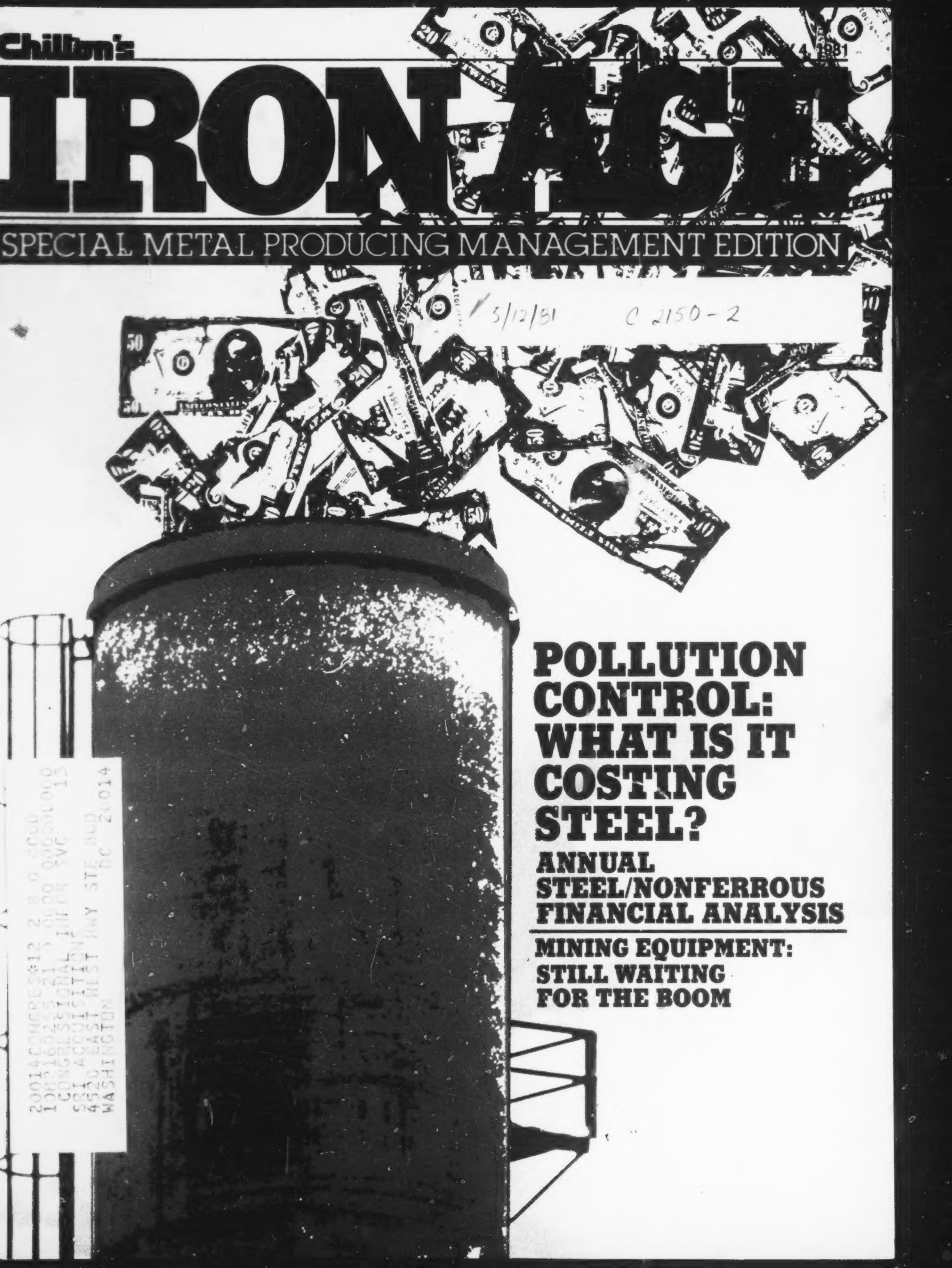

POLLUTION CONTROL: WHAT IS IT COSTING STEEL?

ANNUAL STEEL/NONFERROUS FINANCIAL ANALYSIS

MINING EQUIPMENT: STILL WAITING FOR THE BOOM

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IRON AGE

VOL. 224, NO. 13

MAY 4, 1981

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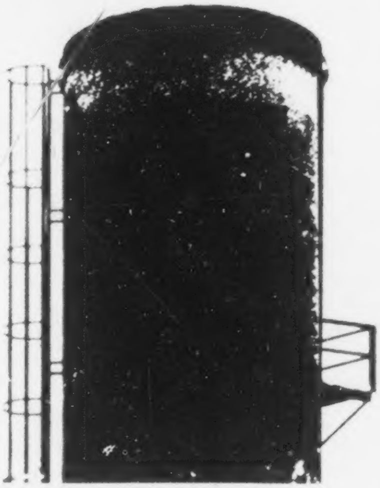

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

BUSINESS FEATURES

STEEL—JUST FAIR '80; NONFERROUS MIXED

Steelmakers produced and sold less steel last year but profits were up. Nonferrous producers spent heavily on plants and equipment.

Steel

For steelmakers 1980 was far from a banner year. But for the industry as a whole it was a big improvement over 1979.

The *Iron Age* financial analysis of 26 leading steel producers (see over) showed an increase of more than 27 pct in net income, a 9 pct advance in operating profit, and a return on investment of 8 pct, as contrasted with the 7 pct return of '79.

Volume of steel produced and shipped in '80 was not the reason for the improvement. The industry produced 111.8 million tons last year, down 18 pct from 1979's 136.3 million tons. Production, in fact, was the lowest since 1963's 109 million tons.

Shipments in '80 were only 83.8 million tons, down from '79's 100.2 million tons (a 16.4 pct decrease) and the lowest since 1975's 80 million tons.

Neither were sales the full answer in 1980. At $54.2 billion, they were off 2 pct from 1979's $55.3 billion.

What success the industry had in '80 was due in part to operating economies, diversification and a good performance by U. S. Steel Corp. From a loss in '79 USS rebounded to earn $504.5 million in '80. This was almost one-third of the whole industry's earnings of $1.56 billion.

Yet only 12 pct of USS's operating income came from steel which accounted for 70 pct of its sales. The big money earners for U. S. Steel were transportation, manufacturing, resource development and chemicals.

For the industry as a whole, 18 companies had gains in net income in '80, 5 had declines. Three had losses—McLouth, Laclede and Keystone.

In terms of operating profit 10 of the companies had gains, 15 had declines, and one stayed just about even with '79.

Helping steel last year was a small downturn in employment costs. At $16.41 billion they were down 0.3 pct from '79's $16.42 billion.

Operating profit in '80 was $4.3 billion, up 9.2 pct from the previous year's $3.9 billion. Operating profit as a percent of sales dropped to 8.3 pct from '79's 9.9 pct.

Net income last year was $1.5 billion, up from the previous year's $1.2 billion—a 27.7 pct improvement. Net income as a percent of sales slipped to 3 pct from the previous year's 3.9 pct.

Capital expenditures for the industry in 1980 were $3.25 billion, down slightly (1.1 pct) from 1979's $3.29 billion.

Funded debt for the 26 companies represented rose 7.2 pct, going from $8.8 billion to $9.5 billion. And interest expense on that debt rose 10.6 pct to $787 million.

It is much too early to tell how the industry will fare in '81. But based on the activity of the first few months the year looks promising with present prospects of hitting between 90 million to 94 million tons in shipments. But as '80 proved, volume of steel shipments is not the whole answer to money making by the steel companies.

However, the respected *Value Line* investment analysis sees a modest recovery for the industry this year. And the prospect of a major profit surge for domestic steelmakers in the 1983-85 period.

During the next three to five years, *Value Line* believes there will be a "sustained economic revival led by the capital goods sector" that should spur steel industry profits. The advisory service bases its forecast of a mid-'80s capital goods boom on three factors. The three are improved spending for new plant and equipment, more development of domestic oil and gas and approval of faster depreciation schedules by Congress.

Nonferrous

Leading nonferrous metals producers in the U.S. and Canada struggled through a rough and tumble year in 1980 that many of them are hoping proves to be the mirror image of 1981. The bloom came off the rose in the latter months of 1980—particularly the fourth quarter—as lower automobile production, housing starts and other elements of the business recession took their toll of metals consumption.

Whichever way their profits went during 1980, 21 of the 22 leading producers and fabricators surveyed had one thing in common: higher capital expenditures.

Expenditures to beef up plant and equipment were sharply higher in many cases and marginally higher in others. North America's four largest aluminum producers, for instance, boosted their capital spending by an aggregate $550 million to nearly $1.9 billion during 1980.

The copper, lead and zinc producers also were well represented. Amax, Asarco, Cominco, Hudson Bay Mining, Kennecott, St. Joe Minerals and Texasgulf bulked large in the capital spending department and the nickel industry was well represented by Inco and Falconbridge. Not all the improvements went for new metals capacity of course; many of the nonferrous producers put a lot of money into such energy "sidelines" as oil, gas and coal.

The business recession dug deeply into metals consumption in the U.S. last year. The aluminum companies were able to offset a large part of the impact with a record-breaking pace of exports. The traffic was the other way around in copper, however. A lengthy mine strike dropped U.S. mine production by an estimated 360,000 tons, according to Phelps Dodge Corp. Meanwhile, foreign refined copper poured in at a record clip (over 500,000 tons) to fill a gap that had already been narrowed by reduced domestic requirements.

Additional copies of the 1980 Metal Industries Financial Analyses may be obtained by writing to Iron Age Readers' Service Department, Chilton Way, Radnor, Pa. 19089. Copies are $1 each. Enclose check or money order with request.

Chilton's Iron Age 1980 STEEL INDUSTRY FINANCIAL

Company[1]	Year	Raw Steel Production Thousands of Net Tons	Steel Shipments Thousands of Net Tons	Net Sales & Operating Revenues Thousands of Dollars	Employment Costs Thousands of Dollars	Employment Costs as Percent of Sales	Operating Profit[3] 000 of $	Operating Profit as Percent of Sales	Depreciation, Depletion and Amortization 000 of $	Provision for Federal Income Taxe 000 of $
1. United States Steel Corp.[6,7,8,9,10,11]	1980	23,300	17,200	12,492,100	4,791,800	38.4	1,339,600	10.7	523,800	102,400
	1979	29,700	21,000	12,929,100	5,058,900	39.1	129,500	1.0	531,500	(293,000)
2. Bethlehem Steel Corp.	1980	14,998	11,081	6,817,200	2,974,100	44.1	538,400	8.0	375,500	(26,000)
	1979	19,401	13,436	7,218,900	2,939,100	41.2	826,000	11.6	351,300	119,000
3. LTV Corp. (Jones & Laughlin)[12]	1980	9,699	6,998	8,009,958	—	—	419,462	5.2	128,830	23,000
	1979	11,457	8,538	7,996,805	—	—	449,903	5.6	132,441	24,600
4. Republic Steel Corp.	1980	8,530	6,280	3,760,042	1,355,811	36.1	166,758	4.4	119,100	(21,100)
	1979	10,005	7,374	3,987,361	1,337,704	33.5	281,771	7.1	110,896	26,000
5. National Steel Corp.	1980	7,569	6,585	3,706,658	1,227,100	33.1	274,351	7.4	154,529	(18,959)
	1979	10,731	8,258	4,234,458	1,261,937	29.8	401,824	9.5	155,595	58,800
6. Armco Inc.	1980	7,290	5,391	5,678,000	1,705,700	30.0	575,000	10.1	149,800	115,600
	1979	8,002	6,004	5,035,100	1,523,400	30.3	559,100	11.1	141,100	122,400
7. Inland Steel Co.[13]	1980	7,049	5,286	3,280,110	1,104,525	33.9	194,968	6.0	144,725	(26,260)
	1979	8,221	6,036	3,657,707	1,110,995	30.6	341,431	9.4	129,386	28,460
8. Wheeling-Pittsburgh Steel Corp.	1980	3,119	2,210	1,100,061	460,269	41.8	60,334	5.5	39,052	(5,599)
	1979	3,895	2,889	1,250,742	472,693	37.8	108,237	8.7	35,699	9,950
9. Kaiser Steel Corp.[14,15]	1980	1,896	1,468	884,942	414,097	46.8	42,437	4.8	54,573	111,906
	1979	2,713	1,904	949,728	440,174	46.3	28,113	3.0	42,664	44,848
10. CF&I Steel Corp.	1980	1,574	1,161	614,003	260,651	42.5	72,811	11.9	45,410	7,141
	1979	1,668	1,179	557,231	245,920	44.1	61,481	11.0	44,235	1,329
11. McLouth Steel Corp.	1980	1,499	1,294	614,012	161,089	26.0	(35,308)	(5.8)	23,482	(4,819)
	1979	1,885	1,541	725,099	179,902	25.0	46,348	6.4	24,640	1,784
12. Northwestern Steel & Wire Co.	1980	1,447	1,097	426,072	153,579	36.1	49,974	11.7	12,670	14,513
	1979	1,700	1,349	477,155	157,111	32.9	85,814	18.0	10,849	34,804
13. Korf Industries, Inc.	1980	1,389	1,314	461,122	83,091	18.0	52,754	11.4	—	—
	1979	1,363	1,306	457,097	76,207	16.7	79,114	17.3	—	—
14. Nucor Corp.[16]	1980	1,193	1,044	482,420	102,522	21.3	96,559	20.0	13,296	31,000
	1979	1,014	917	428,682	87,470	20.4	91,581	21.4	9,713	32,500
15. Sharon Steel Corp.	1980	1,108	981	829,840	215,712	26.0	96,708	11.7	23,937	(15,025)
	1979	1,364	1,062	583,864	138,335	23.7	105,603	18.1	13,035	32,940
16. Interlake, Inc.[18,19]	1980	798	649	1,055,883	333,664	31.6	58,650	5.6	26,869	5,998
	1979	1,113	877	1,104,588	342,635	31.0	79,733	7.2	25,015	3,129
17. Florida Steel Corp.[20]	1980	794	721	286,641	51,117	17.8	40,492	14.13	5,061	12,735
	1979	756	680	244,713	42,513	18.3	32,030	13.08	4,128	11,327
18. Lukens Steel Co.[21]	1980	734	N.A.	375,883	146,456	39.0	22,149	5.9	12,258	1,703
	1979	804	N.A.	342,305	142,564	41.6	22,166	6.5	10,574	2,718
19. Laclede Steel Co.	1980	651	492	230,577	94,843	41.1	6,982	3.0	4,894	(1,125)
	1979	691	507	234,548	95,192	40.6	8,039	3.4	4,619	(353)
20. Keystone Consolidated Industries, Inc.	1980	586	546	396,136	161,339	40.7	6,504	1.6	9,987	(5,043)
	1979	565	593	412,288	159,453	38.7	16,091	3.9	10,405	(361)
21. Cyclops Corp.[22]	1980	570	716	978,976	243,917	24.9	63,450	6.5	15,452	16,711
	1979	931	1,054	915,361	255,053	27.9	23,506	2.7	14,072	(1,185)
22. Copperweld Corp.	1980	468	315	464,348	150,836	32.5	45,154	9.7	11,133	11,736
	1979	561	389	494,821	149,204	30.2	55,445	11.2	9,243	18,975
23. Phoenix Steel Corp.	1980	408	278	175,638	58,900	33.0	17,024	9.7	4,729	35
	1979	403	281	161,318	57,500	36.0	18,226	11.3	4,788	110
24. Athlone Industries, Inc.	1980	—	—	282,742	—	—	32,170	11.4	4,467	9,714
	1979	—	—	281,846	—	—	30,823	10.9	4,038	8,248
25. Carpenter Technology Corporation	1980	—	—	559,060	164,803	29.5	88,583	15.8	10,806	34,172
	1979	—	—	568,623	147,396	31.5	82,063	17.5	9,564	31,341
26. Eastmet Corporation[23]	1980	—	—	273,645	—	—	23,208	8.5	3.345	6,284
	1979	—	—	198,690	—	—	19,028	9.7	2,640	7,530
GRAND TOTAL	1980	111,834,874[2]	83,852,578[2]	54,236,069	16,415,921	33.2	4,349,174	8.3	1,917,705	380,718
	1979	136,341,387[2]	100,262,129[2]	55,348,150	16,421,358	32.2	3,982,970	9.9	1,832,139	325,894
Percent change 1979 to 1980		−18.0	16.4	−2.0	−0.3	—	—	—	+4.7	+16.8

NALYSIS

Data Cover Ope

Net Income 000 of $	Net Income Percent of Sales	Invested Capital (to include funded debt payable after one year, preferred and common stock surplus) 000 of $	Net Income Percent of Investment*	Working Capital 000 of $	Funded Debt (Payable after 1 year) 000 of $	Interest Expense on Funded Debt 000 of $	Capital Expenditures 000 of $	Stockholders Equity* 000 of $	Pct Return on Stockholders' Equity	Number of Common Shares Outstanding 000 of $	Common Stock 000 of $	Common Dividend Declared 000 of $
504,500	4.0	8,333,500	8.6	1,329,700	2,401,300	208,900	752,900	5,288,200	9.5	88,160	1,763,200	139,700
(293,000)	(2.3)	7,953,700	(1.4)	1,045,900	2,307,800	184,000	979,000	4,894,600	(6.0)	86,756	1,735,100	137,500
121,000	1.8	3,631,900	5.2	756,600	1,009,900	67,900	506,500	2,622,000	4.7	43,678	507,000	69,800
275,700	3.9	3,578,100	9.9	808,300	1,007,700	80,000	418,500	2,570,400	11.7	43,664	506,600	65,500
127,893	1.6	2,258,710	11.8	802,726	1,418,996	139,739	242,080	839,714	16.4	35,793	798,940	—
173,527	2.2	2,194,410	14.6	801,564	1,476,644	146,258	325,848	717,766	27.3	24,645	418,522	—
50,983	1.4	2,151,354	3.2	394,488	643,538	17,775	346,403	1,507,816	3.4	16,183	161,827	32,365
121,158	3.0	1,920,876	7.5	353,408	431,678	23,717	341,088	1,489,198	8.6	16,183	161,827	36,411
83,759	2.3	2,270,145	6.3	454,419	826,053	58,388	265,340	1,444,092	5.8	18,768	70,016	44,590
126,083	3.0	2,082,120	8.6	542,402	671,282	52,139	200,463	1,410,838	8.9	19,015	75,931	50,318
265,300	4.7	2,609,000	11.9	851,400	555,800	44,300	271,300	2,053,200	13.6	55,312	276,600	83,300
248,700	4.9	2,428,400	12.2	704,900	578,500	46,900	162,300	1,849,900	14.1	53,034	265,100	72,700
29,681	9	2,104,768	2.5	346,963	805,406	46,972	240,903	1,299,362	2.3	20,948	250,953	50,341
131,108	3.6	1,944,635	8.1	246,246	633,016	52,623	284,223	1,311,619	10.3	20,725	249,102	58,170
14,675	1.3	696,236	3.9	157,432	279,752	12,206	147,199	416,484	3.5	3,893	38,931	—
49,690	4.0	572,863	10.9	139,188	169,700	12,898	53,753	403,163	12.3	3,844	38,438	3,827
191,469	21.6	961,035	22.7	400,637	267,511	26,317	51,299	693,524	27.6	7,018	4,678	—
46,766	4.9	830,762	9.6	141,227	327,820	32,969	78,486	502,942	9.3	7,009	4,673	7,884
19,005	3.1	250,370	10.5	43,919	44,143	7,386	31,903	206,227	9.1	3,966	19,747	25,778
15,371	2.8	266,214	8.3	47,872	53,214	6,692	34,999	213,000	7.3	3,966	19,747	11,898
(56,568)	(9.2)	268,908	(20.7)	21,721	107,000	10,012	18,274	131,909	(42.9)	5,453	13,633	—
9,368	1.3	307,176	3.1	59,815	117,950	10,556	52,984	179,226	4.5	5,453	13,633	—
22,718	5.3	251,680	9.1	117,248	650	73	35,111	251,030	9.1	7,506	37,532	13,511
40,059	8.4	243,023	16.5	129,415	1,200	102	37,183	241,823	16.6	7,506	37,532	12,010
2,016	4	263,377	—	47,568	—	—	13,969	—	—	—	—	—
23,290	5.1	256,713	—	40,101	—	—	15,990	—	—	—	—	—
45,060	9.3	217,209	22.4	48,872	39,605	3,561	62,440	177,604	29.0	6,850	16,066	2,999
42,265	9.9	174,556	26.4	53,826	41,398	3,852	45,989	133,258	37.5	6,754	13,367	2,308
3,337	0.4	747,587	12.0	266,421	513,766	86,320	54,800	231,515	1.4	82,053	822	27,748
58,603	10.0	746,302	9.8	287,022	486,749	14,901	28,012	257,300	22.8	74,734	74,746	26,161
13,818	1.3	46[illegible]27	4.3	181,145	133,020	11,965	31,276	336,707	4.2	6,089	97,101	13,287
39,735	3.6	469,484	9.6	162,270	135,503	11,854	69,556	333,981	12.7	6,003	94,906	13,127
18,532	6.47	106,585	21.3	46,841	30,353	4,165	23,559	87,623	23.26	2,945	6,988	2,871
14,468	5.91	82,908	20.0	41,003	23,500	2,107	17,943	71,695	22.04	2,935	6,721	2,420
4,705	1.3	162,933	5.0	35,145	26,125	3,483	13,170	136,808	3.5	5,233	3,180	3,558
7,467	2.2	167,501	5.3	37,607	31,840	1,407	34,718	135,661	5.6	5,233	3,180	4,998
(788)	(0.3)	89,166	3.6	46,911	29,250	4,001	2,175	59,916	(1.3)	2,210	44,200	—
193	0.1	82,904	4.6	38,197	33,400	3,580	4,704	49,504	0.4	1,650	33,000	—
(3,450)	(.9)	160,876	(.6)	68,833	50,633	5,010	13,527	110,099	(3.1)	1,874	2,610	—
757	2	168,515	2.0	76,984	54,822	5,290	7,023	113,549	.7	1,874	2,610	—
20,407	2.1	254,595	10.1	130,775	77,788	10,880	23,380	176,807	11.5	3,538	3,538	4,046
5,263	.6	223,191	3.5	123,610	62,437	5,356	24,147	160,754	3.3	3,467	3,467	3,946
18,981	4.1	219,013	10.4	53,562	56,510	3,765	41,123	162,503	11.7	5,712	7,140	8,448
23,078	4.7	206,895	13.3	75,764	55,012	4,396	27,649	151,883	15.2	5,708	7,135	7,650
1,265	.7	96,314	12.7	23,055	94,005	10,995	10,406	2,309	54.8	9,173	21,087	—
3,767	2.3	93,886	14.2	25,669	92,817	9,561	11,860	1,069	352.4	9,171	21,086	—
10,402	3.1	123,492	8.4	47,563	68,406	—	5,832	55,086	18.9	2,670	267	3,882
11,246	4.0	132,867	8.5	58,038	65,364	—	6,217	53,470	21.0	2,803	280	3,496
43,097	7.7	254,526	17.1	120,953	4,746	508	31,383	249,780	17.3	8,583	44,367	16,296
40,740	8.7	228,090	18.0	103,756	5,381	418	25,378	222,709	18.3	8,569	44,294	13,689
10,212	3.7	121,419	11.2	62,200	41,826	3,367	23,327	79,593	12.8	4,876	4,876	3,989
7,880	4.0	89,006	10.2	60,884	20,270	1,158	9,293	68,736	11.5	4,253	4,263	3,403
,562,009	3.0	29,074,425	8.0	6,857,097	9,526,082	787,988	3,259,579	18,619,908	—	—	—	—
,223,282	3.9	27,445,197	7.0	6,204,968	8,884,997	712,734	3,297,306	17,538,044	—	—	—	—
+27.7	—	+5.9	—	+10.5	+7.2	+10.6	−1.1	+6.2	—	—	—	—

ations of Companies Representing Approximately 90 pct of the Steel Industry

Earnings Per Common Share	Dividends Per Common Share	Price Range Common Share	P/E Ratio	
5.77	1.60	25¼-16½	4-3	1
(3.41)	1.60	26¼-16½	—	
2.77	1.60	28.75/19.00	10.38/6.86	2
6.31	1.50	25.625/19.50	4.06/3.09	
3.95	—	20¾-7¼	5.1	3
6.03	—	10⅛-6⅝	1.3	
3.15	2.00	27.000-20.250	7.5	4
7.49	2.25	31.000-22.500	3.3	
4.42	2.35	32⅛-23	7.4-1/5.2-1	5
6.54	2.60	35½-25¼	5.4-1/3.9-1	
4.73	1.57	23-41½	8.03	6
4.51	1.43	19-27½	5.54	
1.38	2.40	25⅝-33½	20	7
6.27	2.80	29½-40⅜	5	
2.85	—	15.50-23.875	7.4	8
12.16	1.00	11.125-24.00	1.4	
27.16	—	24⅞-50¼	.9-1.9	9
6.55	1.125	46-18½	7.0-2.9	
4.79	6.50	47-36½	8-10	10
3.88	3.00	38-29	7-10	
(10.37)	—	9⅞-5½	—	11
1.58	—	13¾-7⅜	5-1	
3.03	1.80	29¾-22⅝	10-7	12
5.34	1.60	32½-24¼	7-5	
—	—	—	—	13
—	—	—	—	
6.62	.44	74.25-30.00	11.2-4.5	14
6.29	.34	40.63-20.08	6.5-3.2	
.04	.34	10⅝-4¾	265.63-118.75	15
.71	.32	5⅞-⅓	8.3-2.5	
2.29	2.20	33¾-22½	12.12	16
6.66	2.20	29½-22⅜	3.75	
6.29	.975	38¾-15¼	6.2-2.4	17
4.93	.825	20⅛-10⅛	4.1-2.1	
.90	.68	17.25-10.75	15.6	18
1.44	.96	16.75-12.00	10.0	
(.44)	—	14-7⅞	—	19
.12	—	15¾-8	—	
(1.84)	—	15½-7½	—	20
.40	—	9½-17½	37.2	
6.14	1.26	18¾-28¼	4.0	21
1.35	1.23	17½-29⅞	16.5	
3.33	1.48	26-16	6.3	22
4.04	1.34	21-15¾	4.6	
(.03)	—	3.625-2.00	—	23
.24	—	4.25-2.00	—	
3.66	1.40	25¾-15¾	6.2	24
1.14	1.20	22⅛-17⅛	4.9	
5.03	1.90	36-24¾	6.1	25
4.76	1.60	31-22⅜	5.4	
2.27	.90	16.17-10.50	6-1	26
1.84	.80	13.83-8.83	6-1	
—	—	—	—	
—	—	—	—	
—	—	—	—	

Parenthesis ( ) denotes loss or credit

Footnotes

1. Companies are ranked on basis of raw steel produced in 1980.
2. AISI figures for the whole industry.
3. Operating profit is income before depreciation, income taxes and interest on long-term debt.
4. Net income percent of investment is net income plus expense on funded debt divided by invested capital.
5. Stockholders' equity is total assets minus total liabilities.
6. USS—Raw steel production '80—includes 200,000 net tons from designated shutdown facilities.
7. USS—Steel shipments—includes 300,000 net tons in '80 and 100,000 net tons in '79 from designated shutdown facilities.
8. USS—Employment costs. For 1980 and 1979 figures include labor and employee benefits related to operations of designated shutdown facilities.
9. USS—Operating profit '79—is after the following non-recurring items: (a) costs attributed to shut down of facilities of $(808,600,000), (b) provision for occupational disease claims of $(88,100,000), (c) unfavorable revaluation of investments $(53,200,000) and (d) a favorable effect of $90,400,000 net of income taxes on prior years of changes in accounting principles.
10. USS—Provision for Federal income taxes '80 includes a $45,600,000 non-recurring extraordinary credit related to the tax benefit of a net operating loss carryforward.
11. USS—Invested capital '79 and '80 includes long-term debt, notes payable, minority interest, preferred stock of consolidated subsidiary, common stock, and income reinvested in business.
12. LTV—Price/Earnings ratio '79 and '80 reflects price at year-end.
13. Inland—Net income—percent of sales represents net income and minority interest as a percent of net sales.
14. Kaiser—1979 figures restated for change in accounting for extended vacation benefits and to reclassify international shipping operations as discontinued operations.
15. Kaiser—Net income and earnings per share—1980 and 1979—includes unusual net gains totaling $158,139,000 or $22.55 per share for 1980 and $64,272,000 or $9.17 per share for 1979. Also includes earnings from discontinued operations of $4.78 per share in 1980 and 67¢ per share in 1979.
16. Nucor—Earnings and dividends per common share for 1979 are restated or adjusted to reflect a 3-for-2 stock split in June, 1979.
17. Interlake—Operating profit—excludes minority interest (net of tax) of $737,000 in 1980 and $2,313,000 in 1979.
18. Interlake—Provision for Federal income taxes '80 and '79 represents all taxes on income.
19. Interlake—Invested capital '80 and '79 includes retained earnings.
20. Florida Steel—Number of common shares, earnings, dividends and common stock price range '79 are adjusted to reflect 2-for-1 stock split approved by board of directors on 1/25/80.
21. Lukens—Working capital '79 Restated—adoption of FASB Statement 37 "Balance sheet classification of deferred income taxes."
22. Cyclops—Net Income and earnings per common share '79 include provision for discontinued operations of $(17,738) or $(5.46) per share.
23. Eastmet—Effective for fiscal 1980, the company changed to LIFO method of accounting.

Chilton's Iron Age 1980 NONFERROUS INDUSTRY F

Dollar Values in Thousands

Company	Year	Net Sales and Operating Revenues 000 of $	Operating Profit 000 of $	Operating Profit as Percent of Sales	U.S. and Foreign Income Taxes 000 of $	Extraordinary Income (Loss) 000 of $	Net Earnings 000 of $	Net Earnings as Percent of Sales
1. Alcan Aluminium Ltd.	1980	5,215,000	938,000	17.9	393,000	—	542,000	10.4
	1979	4,390,000	625,000	14.2	211,000	21,509	427,000	9.7
2. Aluminum Co. of America	1980	5,147,600	677,700	13.2	251,100	—	469,900	9.1
	1979	4,785,600	729,600	15.2	270,200	—	504,600	10.5
3. AMAX Inc.	1980	2,949,170	738,970	25.1	163,000	—	470,390	16.0
	1979	2,865,390	553,970	19.3	94,260	—	365,280	12.7
4. Asarco Inc.	1980	1,817,032	81,451	4.5	60,019	20,866	237,338	13.1
	1979	1,724,219	139,578	8.1	57,700	—	259,076	15.0
5. Cominco, Ltd.	1980	1,442,698	454,874	31.5	117,552	—	169,262	11.7
	1979	1,273,903	496,162	38.9	133,085	—	203,651	16.0
6. Engelhard Minerals & Chemicals Corp.	1980	26,569,974	1,323,900	5.0	169,582	—	532,743	2.0
	1979	18,079,793	943,764	5.2	153,314	—	349,722	1.9
7. Falconbridge Nickel Mines Ltd.	1980	757,815	192,471	25.0	80,100	37,700	109,122	14.0
	1979	789,418	243,567	31.0	90,998	20,000	130,561	17.0
8. Freeport Minerals Co.	1980	664,358	193,284	29.1	39,671	—	147,402	22.2
	1979	487,692	127,699	26.2	22,236	—	101,389	20.8
9. Hecla Mining Co.	1980	77,734	51,010	65.6	19,285	23,291	55,017	70.8
	1979	63,732	36,944	58.0	12,835	11,045	35,154	55.2
10. Hudson Bay Mining & Smelting Co., Ltd.	1980	744,963	79,491	10.7	55,389	21,667	63,108	8.5
	1979	626,486	38,232	6.1	31,874	3,221	34,019	5.4
11. Inco Ltd.	1980	3,036,099	629,780	20.7	237,401	—	219,407	7.2
	1979	2,488,543	424,661	17.1	138,242	—	141,725	5.7
12. Kaiser Aluminum & Chemical Corp.	1980	3,222,100	527,600	16.4	62,500	—	247,600	7.7
	1979	2,926,500	546,300	18.7	108,900	—	232,200	7.9
13. Kennecott Corp.	1980	2,255,834	323,979	14.4	58,900	142,902	192,350	8.5
	1979	2,433,600	236,819	9.7	35,800	38,238	130,402	5.4
14. Martin Marietta Corp.	1980	2,619,327	230,225	9.0	90,400	—	188,133	7.0
	1979	2,060,843	266,438	13.0	121,500	—	178,000	9.0
15. Newmont Mining Corp.	1980	881,598	172,412	19.5	51,923	—	197,372	22.3
	1979	867,578	213,399	24.5	62,939	—	178,763	20.6
16. Noranda Mines Ltd.	1980	2,889,295	549,207	19.0	242,242	47,188	408,355	14.1
	1979	2,484,690	608,626	24.5	227,045	(15,686)	394,509	15.9
17. Olin Corp.	1980	1,852,853	82,516	4.5	4,401	—	33,931	1.8
	1979	1,778,102	128,913	7.3	25,738	—	71,150	4.0
18. Phelps Dodge Corp.	1980	1,440,137	225,221	15.6	25,454	—	91,314	6.3
	1979	1,280,830	272,065	21.2	36,880	—	110,771	8.7
19. Revere Copper & Brass Inc.	1980	748,079	46,485	6.2	14,968	—	21,865	2.9
	1979	788,121	53,272	6.8	13,608	—	25,713	3.3
20. Reynolds Metals Co.	1980	3,653,200	589,800	16.1	104,100	—	180,300	4.9
	1979	3,305,200	620,700	18.8	108,700	—	177,100	5.4
21. St. Joe Minerals Corp.	1980	1,279,083	219,219	17.1	61,845	—	117,082	9.2
	1979	1,148,105	195,320	17.0	32,758	(47,545)	77,586	6.8
22. Texasgulf, Inc.	1980	1,090,135	423,488	38.8	134,800	39,050	325,551	29.9
	1979	789,256	223,021	28.3	71,650	—	136,867	17.3

Aluminum Co. of America: Data for 1980 and 1979 adjusted for Feb. 20, 1981 two-for-one stock split. Stockholder equity for 1979 adjusted for accounting change. Return on average shareholders equity is calculated by dividing net income by average shareholders equity. Return on invested capital is calculated by dividing net income plus interest expense after taxes by the sum of average shareholders equity and average noncurrent long-term debt.

Asarco Inc.: Net for 1980 includes pre-tax profits arising from liquidation of metal inventories accounted for on a LIFO basis of $14.4 million. Also included is a $7 million charge related to the closing of the Tacoma copper refinery. Net for 1979 includes pre-tax profits from liquidation of metal inventories accounted for on a LIFO basis of $38.2 million. Also included is a $13.8 million charge in recognition of loss of value on certain assets at the Amarillo, Tex. refinery. Equity earnings of nonconsolidated associated companies amounted to $195 million in 1980 and $177.2 million in 1979.

Cominco Ltd.: Canadian funds.

Freeport Minerals Co.: There was a three-for-two split of the common stock early in 1980.

Hudson Bay Mining & Smelting Co. Ltd.: Extraordinary gain for 1980 includes $19.5 million gain on sale of an investment and $2.2 million in income tax reductions. Extraordinary gain for 1979 reflects tax reduction from application of prior years' losses.

INANCIAL ANALYSIS

( ) Parenthesis indicates loss or credit

Net Earnings Per Common Share	Dividends Per Common Share	Number of Common Shares Out-standing at Year End	Srockholders Equity 000 of $	Net Earnings as Percent of Stockholders Equity	Funded and Other Long Term Debt 000 of $	Invested Capital 000 of $	Long Term Debt as Pct of Invested Capital	Net Earnings as Percent of Invested Capital	Working Capital 000 of $	Capital Spending 000 of $	Retained Earnings at End of Year 000 of $	
6.70	1.35	80,893,000	2,463,000	22.0	910,000	3,373,000	26.9	16.0	1,373,000	752,000	2,036,000	1.
5.28	1.05	80,893,000	2,030,000	21.0	759,000	2,789,000	27.2	15.3	1,275,000	495,000	1,603,000	
6.54	1.60	73,065,370	2,933,800	17.3	1,017,500	3,951,300	25.8	13.6	820,000	637,800	2,604,700	2.
7.15	1.30	70,240,082	2,505,600	22.0	1,020,600	3,526,200	28.9	16.3	859,000	420,000	2,251,600	
7.48	2.40	62,076,742	2,719,490	17.3	1,184,620	3,904,110	30.3	12.0	487,320	1,296,000	1,431,420	3.
6.49	1.72	53,448,174	2,132,940	17.1	752,710	2,885,650	26.1	12.7	301,640	518,000	1,125,740	
8.02	1.85	29,611,470	1,313,942	18.1	277,641	1,591,583	17.4	14.9	268,015	130,432	925,921	4.
8.56	1.30	29,553,007	1,130,721	22.9	284,941	1,415,662	20.1	18.3	240,314	70,016	743,349	
9.44	4.40	17,084,453	766,273	26.1	329,014	1,095,287	30.0	15.5	305,158	280,300	631,507	5.
11.52	4.75	17,050,003	680,688	37.7	226,000	906,688	24.9	22.5	269,630	150,100	545,554	
7.85	1.11	68,272,223	1,595,930	39.1	473,373	2,069,303	22.9	25.7	1,258,644	414,037	1,443,093	6.
5.32	0.77	68,009,742	1,127,769	36.5	232,138	1,359,907	17.1	25.7	964,648	78,873	985,898	
20.61	3.50	5,025,000	506,141	22.0	285,801	791,942	36.0	14.0	362,119	90,995	419,952	7.
25.03	3.00	5,025,000	495,921	26.0	287,170	783,091	37.0	17.0	380,883	58,352	334,732	
4.67	1.00	31,582,000	498,489	33.6	146,315	644,804	22.7	22.9	20,349	216,481	N.A.	8.
4.84	1.17	20,986,000	379,943	29.7	123,015	502,958	24.4	20.2	28,401	123,628	N.A.	
7.87	0.13	6,988,714	(41,967)	—	—	41,967	—	131.0	21,635	12,211	11,950	9.
5.03	—	6,988,714	(9,622)	—	32,800	23,178	141.5	151.7	17,988	2,886	(42,193)	
6.25	1.20	10,101,739	336,656	20.3	100,553	437,209	23.0	14.4	211,206	379,036	265,409	10.
3.05	0.80	10,101,739	285,786	12.5	125,716	441,502	30.6	8.3	134,665	82,117	214,539	
2.56	.0.69	75,967,000	2,162,341	10.6	1,044,780	3,207,121	32.6	6.8	1,039,458	191,461	1,630,852	11.
1.58	0.50	75,134,000	2,006,255	7.1	1,072,326	3,078,581	34.8	4.6	943,121	128,848	1,489,678	
5.91	1.30	42,453,000	1,418,700	18.8	682,500	2,101,200	32.5	11.8	394,500	231,400	1,125,800	12.
5.66	1.10	41,132,000	1,219,700	20.7	734,700	1,954,400	37.6	11.9	447,300	197,700	934,100	
5.79	1.40	33,246,053	1,615,800	12.5	740,663	2,356,463	31.4	8.2	565,842	194,586	1,345,305	13.
3.93	1.05	33,159,153	1,467,675	8.9	560,808	2,028,483	27.6	6.4	384,423	157,909	1,199,433	
7.55	2.32	24,947,202	1,103,146	18.0	162,968	1,266,114	13.0	15.0	346,992	352,963	914,857	14.
7.10	1.98	24,853,752	969,456	19.0	136,056	1,105,512	12.0	16.0	419,401	230,772	784,596	
7.64	2.03	25,830,153	922,768	21.3	143,964	1,066,732	13.4	18.5	231,652	118,047	775,432	15.
7.05	1.50	25,124,953	775,872	23.0	207,676	985,548	21.1	18.1	238,554	95,841	631,357	
4.06	1.25	101,789,000	2,000,982	20.4	580,477	2,581,459	22.5	15.8	821,521	292,966	1,394,969	16.
4.70	0.85	90,289,000	1,463,250	27.0	602,483	2,065,733	29.2	19.1	687,363	284,887	1,113,510	
1.41	1.03	24,035,000	750,120	4.6	298,006	1,048,126	28.4	3.2	273,516	172,016	591,235	17.
2.97	0.97	23,956,000	739,992	9.9	292,789	1,032,781	28.3	6.9	259,482	161,151	581,906	
4.20	1.55	20,880,971	1,029,433	9.1	626,749	1,704,472	36.8	5.4	239,597	126,668	876,083	18.
5.06	1.20	20,717,838	969,193	11.3	605,554	1,649,337	36.7	6.7	215,687	106,807	821,112	
3.82	—	5,683,644	180,976	12.8	154,475	335,451	46.0	6.5	123,841	19,319	130,525	19.
4.50	—	5,676,665	160,651	17.4	203,836	364,487	55.9	7.1	150,678	22,478	108,748	
9.32	2.25	19,167,666	1,347,800	14.0	835,900	2,184,600	38.3	8.3	576,700	271,400	1,098,000	20.
9.25	2.00	18,953,136	1,211,100	15.4	870,600	2,081,700	41.8	8.5	682,500	230,100	961,900	
2.60	0.78	45,335,282	987,349	15.1	423,864	1,411,213	30.0	8.3	385,060	383,738	426,253	21.
3.46	1.38	22,457,600	568,199	14.0	192,950	761,149	25.3	10.2	123,755	210,811	344,128	
9.70	1.50	33,429,916	1,167,578	32.0	344,450	1,512,028	22.8	21.5	292,304	352,065	956,563	22.
4.05	1.20	31,885,571	870,456	16.7	351,169	1,221,625	28.7	11.2	266,573	165,004	688,151	

Inco Ltd.: Net sales exclude "other income" amounting to $41.7 million in 1980 and $35.1 million in 1979.

Kennecott Corp.: Extraordinary gain for 1980 reflects sale of phosphate interests.

Olin Corp.: Results for 1980 include the effects of provision of $63 million ($40 million after taxes) for restructuring of the Winchester Group and disposal of the company's sporting arms business. Excluding this special provision, operating profit would be $145.5 million; net income would be $72.9 million, or $3.08 per share. Operating profit would be 7.9 pct of sales; net income would be 4 pct of sales. Net earnings as a percentage of average stockholders equity and of invested capital would be 9.9 pct and 7.1 pct respectively.

Phelps Dodge Corp.: Operating profit is before depreciation, depletion, amortization and S.G.A. expense. Invested capital includes redemption value of preferred shares.

Revere Copper and Brass Inc.: Funded and other long-term debt includes current portion of long-term debt.

St. Joe Minerals Corp.: The common stock was split two-for-one in 1980.

Texasgulf Inc.: Extraordinary gain for 1980 represents the cumulative effect of change to flow-through method of accounting for investment tax credits.

BUSINESS FINANCEFRONT

TRW sets its goals in non-inflated terms

"The principal difference between our new and our earlier goals is that the new ones are now set in *real* terms, after adjustment for inflation."

So declares Ruben F. Mettler, chairman of the board and chief executive officer, TRW Inc. in the company's 1980 annual report.

His statement marks one more company's recognition that it can no longer afford to measure and plan by the misleading yardstick of current, inflated dollars.

"Goals are set in real terms, after adjusting for inflation."

Ruben F. Mettler, chairman,
TRW Inc.

Goals, as Mr. Mettler stresses, must be expressed in constant, real dollar terms.

The TRW chairman notes, "We have established new qualitative and quantitative goals for the 1980s, including more ambitious financial goals.

"Our new financial goals continue our focus on quality as measured by high return on investment, high sustainable earnings growth, high cash flow and a prudent debt level."

After that, Mr. Mettler points out that the new goals are set in real, not inflation-loaded dollars.

He adds, "We seek a real sustainable return on investment of 10 pct, real earnings and dividend growth of 5 pct per year during the 1980s and maintenance of a strong A rating on our debt securities.

"If inflation rates average about 10 pct," the TRW chairman states, "then these inflation-adjusted goals require that we achieve, in reported terms, more than a 20 pct return on equity and dividend and earnings growth averaging about 15 pct per year."

After expressing the conviction that these goals can be met, Mr. Mettler adds, "Supporting our new goals for the 1980s are company-wide projects receiving special priority attention by all staff and line organizations."

One of these projects, he indicates, is installing conceptually and technologically more advanced management systems.

"Included in this," says Ruben Mettler, "is a major program to provide our decentralized managers with the tools to plan and control their operations in *real,* inflation-adjusted terms."

Fewer multinationals are based in U.S.

In 1963 the United States accounted for 67 of the 100 largest industrial corporations in the world. By 1971 that number had dropped to 58. And in 1979, the latest count made, it had further shrunk to 47.

The big gainers in the span from 1963 to 1979 were France, going from 4 to 11 and Japan, going from 3 to 7. Germany stayed around 13, the United Kingdom at 7 and Italy at 2 or 3. (See table.)

When the world's 500 largest companies are considered, however, the U.S. is in the lead by a more substantial margin.

In the 1979 count the U.S. had 219 companies among the top 500. Japan was second with 71 companies, followed by the United Kingdom (51), West Germany (37), France (27) and Canada (19).

All this information is presented in the Conference Board's report entitled *The World's Multinationals: A Global Challenge.*

"A majority of the world's 100 largest corporations are no longer American-based firms but foreign multinationals," the Board notes. "And while the U.S. boosted 280 of the world's 500 largest industrial firms in 1971, the number has now dropped to 219."

Where the Big Companies Are

100 largest by country of origin

	1963	1971	1979
U.S.	67	58	47
Germany	13	11	13
United Kingdom	7	7	7
France	4	5	11
Japan	3	8	7
Italy	2	3	3

Source: Conf. Board

John Hein, director of international economics for The Conference Board and author of the report notes, "This indicates a clear reversal of trends prevailing only a decade ago, when widespread foreign fears were expressed about U.S. corporate dominance of the world's major industrial markets."

Foreign multinationals have been growing considerably faster in recent years than American multinationals, it's pointed out. The report shows that while total sales of the 10 largest U.S. companies were about 2½ times greater than those of the top 10 foreign corporations in 1963, they were only one-and-a-half times as large in 1979.

"It's amply clear," the report states, "that over the past two decades, non-U.S. multinationals, primarily from Western Europe and Japan, have enhanced their position in the world economy at the expense of U.S.-based firms. In addition, competition from state-trading companies in developing countries, from state-trading activities in Socialist economies, and from nationally owned or closely controlled enterprises in major European countries, are all bringing about further fundamental changes in global trading and investment patterns."

Cash flow important corporate measure

Cash flow is assuming more and more importance as a financial measuring stick.

So the Financial Accounting Standards Board (FASB) which establishes accounting standards has issued a discussion memorandum to its members and asked for comments.

The publication called *Reporting Funds Flows, Liquidity and Financial Flexibility,* discusses issues involved in deciding if any changes should be made in current reporting practices.

In a recent FASB newsletter Thomas S. Postek, an FASB project manager asks, "How much cash does a business have? How much does it need? What are its sources and uses of cash? How do increasing costs affect cash available to finance expansion? Can a business obtain more cash if it is needed?

"Information about cash is important for all business decisions," he adds.

ARE THIEVES RIDING HIGH IN THE OIL COUNTRY?

The feverish pace of drilling has made oil field equipment and critical materials hard to find and created a market for the criminal.

By Susan T. Parker

Joe had been a faithful and hard-working employee for a drill bit manufacturing firm in Texas for many years. During that time, he had seen some of his friends and co-workers conceal carbide knobs used for drill bits in their lunch pails and steal them from the plant. Joe didn't know what his friends did with the carbide until he asked them.

He learned that his co-workers were taking the carbide to a small warehouse where a fencing operation would buy, re-process and sell it back to his employer.

They went to the warehouse twice a week with several hundred pounds of carbide valued in thousands of dollars.

Joe's friends tried to interest him in their little scheme, but he wanted no part of it. He told them that what they were doing was illegal. His convictions, however, later became blurred when his bills became too much to handle. Soon, Joe was putting carbide knobs into his lunch pail.

The only fictitious part of this story is Joe's name. In a three-month period, the drill bit manufacturer's employees managed to bilk the firm out of 500,000 lbs of carbide.

But in the end, they paid for it. Houston-based Intertect, Inc., an investigative firm specializing in corporate and financial matters, uncovered a check book filled with names, dates and amounts of stolen carbide when it inquired into the operation of the dealer who was buying carbide from the employees.

The check book was matched against a list of the company's employees and ultimately led to the prosecution of six workers and the firing of several others, including two supervisors.

The security force was also let go after it was learned that several of the security guards knew about the theft ring.

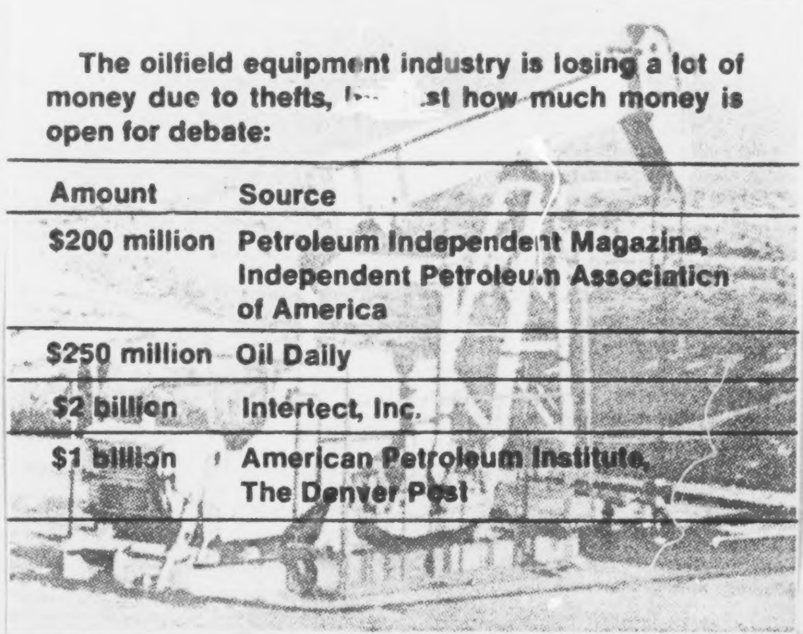
Though unfortunate, the incident was by no means an isolated occurrence. In fact, thefts of oilfield equipment, particularly valves and drill bits, have risen sharply in the past year or so. This has earned the industry the distinction of having the "highest growth rate of theft" in U.S. business, says Edmund Pankau, Intertect's president.

Personal monetary gain still appears to be the biggest reason for the theft of oilfield products and equipment, especially those items containing costly copper, brass, titanium and carbide. Mr. Pankau also pointed out that the theft problem has been further exacerbated by the inability of oilfield equipment manufacturers to keep pace with the oil industry's feverish drilling activity. In some instances, an equipment operator, in desperate need of a mud pump, won't think twice about going to another country or state to steal the equipment from another firm's rig, he noted.

This supply-demand gap has also led to the creation of organized rings of heavy equipment dealers in Texas, Oklahoma and Louisiana. Some of these rings are capable of stripping an entire rig in less than an hour and making off with equipment valued in the thousands of dollars, explained Mr. Pankau, a former special agent for the Organized Crime Section, U.S. Treasury Intelligence Division.

"The breakneck pace of drilling and (well) completion activity coupled with the demand for oilfield products has created a sellers' market where questions are seldom asked when equipment is offered for sale," he remarked.

Because questions aren't asked, the American Petroleum Institute estimates that the "reported" losses of oilfield equipment due to thefts amounted to about $1 billion in 1980. Mr. Pankau, however, thinks the figure "is much higher than that," possibly $2 million. He cited the higher loss figure, he said, because studies conducted by Intertect show that a company that has been the victim of a theft has to increase its business sixfold just to recoup the initial loss. Mr. Pankau further noted that losses due to fraud in the oilfield industry were



The oilfield equipment industry is losing a lot of money due to thefts, but just how much money is open for debate:

Amount	Source
$200 million	Petroleum Independent Magazine, Independent Petroleum Association of America
$250 million	Oil Daily
$2 billion	Intertect, Inc.
$1 billion	American Petroleum Institute, The Denver Post

responsible for another $5 billion to $10 billion in 1980.

These losses last year were passed on through drillers, the service companies and the producers. They ultimately wound up, of course, in the lap of the consumer. Mr. Pankau estimates consumers are paying eight to 10 cents more per gallon of gas because of the thefts that go unnoticed and those that are not prosecuted.

To underscore the magnitude of the problem, Mr. Pankau said that four years ago his investigation firm did very little business in the oilfield industry. "But now theft, corruption and bribery in the oil patch is becoming the greatest part of our business." He added, "It's growing faster than anyone can keep track of it."

How Hughes Tool Keeps Thieves Off The Rigs

There are a few oilfield equipment companies that are trying to put an end to the rising equipment thefts and Houston-based Hughes Tool Co. is one of them.

For the last two years, Hughes Tool has been offering $10,000 rewards for information leading directly to the arrests and felony convictions of persons involved in the theft or illegal use of Hughes Tool products.

The rewards are part of Hughes' anti-theft program which so far has led to at least six felony convictions. Several cases are now pending, also. The company recently paid out a $10,000 reward to six drilling rig crew members who prevented the theft of two Hughes drilling bits in Duchesne, Utah, last November.

Besides the rewards, Hughes Tool has also mounted an aggressive newspaper and radio advertising campaign and it has set up a toll free number for thefts to be reported.

Hughes Tool was unable to estimate how much it has saved since it started its anti-theft program. "All we know is that our theft rate is not going up," said a Hughes official.

How has the theft of oilfield equipment managed to become so pervasive? One reason is that many of the thefts—at the rig site and corporate level—are difficult to detect.

The majority of oilfield equipment thefts at the rig site go unnoticed simply because of the distance of the site from the company's headquarters and law enforcement officers. As a result, the thieves are literally provided with *carte blanche* to anything they want.

White-collar thieves are especially hard to catch because of the sophistication and ingenuity of their schemes. "As you move up the corporate ladder, the thefts are harder to recognize and cost a much higher price," explained Mr. Pankau.

Furthermore, he said that the current fast-paced drilling activity is keeping some oilfield firms so busy that they don't have the time to notice the thefts. But, he added, "When the drilling activity tapers off, these companies are going to realize that they have one big problem on their hands."

There are oilfield executives who know about the thefts at their companies, but rather than do anything about them, they choose to ignore the magnitude of the situation. For example, Mr. Pankau noted that one Houston-based oilfield firm still refuses to admit that it may have a security problem, even though Intertect saved it $1.5 million by uncovering four thefts in less than two weeks.

In another case, Intertect sent a 40-page report to a Houston firm that was about to acquire a rig fabricating plant telling it that a plant manager literally intended to steal the plant's business from it. The purchasing company, however, disregarded the report, said Mr. Pankau.

By doing so, the plant manager was able to succeed in his plan. He set up his own firm and invited the plant's best salesmen, designers and operating officers to work for him and to bring all of their accounts with them. "These key individuals proceeded to loot the original company so that when the corporate takeover took place, all they got was a piece of property, a building and the employees that (the manager) didn't want. This cost the purchasing company in excess of $5 million in lost sales and time to recover from this theft," said Mr. Pankau.

No legal action was ever taken against the manager. In fact, today he heads up one of the largest independent oilfield supply companies in Houston.

Probably the single biggest factor responsible for the continuing oilfield equipment thefts is the failure by many companies to prosecute those employees they find stealing. Most firms won't prosecute because they don't want to be embarrassed publicly, explained Mr. Pankau. "If it's reported, it makes them look bad. If you were president of a company, would you want to get up in front of your shareholders and have to explain how the company lost $1.5 million?" Therefore, most theft cases are settled quietly behind closed doors. Usually the employee is asked to give back the money, or what's left of it, and then is fired, added Mr. Pankau.

Mr. Pankau said he recently was involved in a case in which a manager for a Canadian oil firm, now drilling in Texas, had embezzled about $5 million from the company in less than six months. It seems that the manager had been buying up oil leases, charging the company 10 times more and making the checks payable to himself. The oil company eventually found him out, but not before he had bought two Rolls Royces, gold watches and gold rings, said Mr. Pankau.

The Canadian oil firm, like most victims of embezzlers, decided to settle the matter quietly and discreetly rather than to prosecute the manager because "the disclosure of this would have literally torn the company up," he noted.

Mr. Pankau said the manager was merely asked to return the money he had left—about $4 million—and then was fired. Put simply, the man bilked the company out of $1 million and no one will ever know about it, except for Mr. Pankau, a few company executives and, of course, the thief. "He, like most white collar criminals, will never see the inside of a police station," Mr. Pankau noted.

Although the man has been blackballed in Texas, Mr. Pankau added, this won't stop him from pulling the same scheme in New Mexico, Louisiana, Mississippi or any other state.

What will it take to prevent further thefts?

"Combatting this problem will take the coordination and cooperation of management, private security and law enforcement (agencies). The inventory shrinkages, shortages and executive fraud must be recognized and labeled exactly what it is—THEFT. The industry needs to admit that the problem does exist and commit themselves to identification and prosecution of their losses instead of passing these costs on through to the consumer as an operating expense," maintained Mr. Pankau. ☐

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METALWORKING PRICE TRENDS

A time for crossed fingers—price cooling signs appear

Slowed business activity seems finally to be cooling inflation.

By no means is the fire being put out. So far, it is a matter of buckets of water being tossed on the fire, and not a matter of hoses pouring water on the conflagration.

In March, the average year-to-year price advance for the 23 metalworking product lines shown on the table here came to 11.0 pct. This compares with an 11.4 pct rate over the three previous month-to-month periods.

And, even more notably, if the month-to-month price rise average in March is put on an annualized basis, it comes to .6 pct.

This compares with a 1.4 pct annualized average scored over the previous 3-month span.

So, there is some softness showing up in prices. It's hard to find. And many industry buyers, facing continuing steep rises in prices of particular products they buy, may scoff at any talk of a slowing of price advances. But it's there. At least for now.

Another sign of a slowing in price rises was seen in the March figures of the National Association of Purchasing Management. The Business Survey Committee found that 55 pct of queried buyers said prices were higher in March compared to the previous month.

The survey report added: "However, a year ago, over three quarters (of the buyers) said prices were higher, and two years ago 84 pct reported higher prices than the previous month."

Price softening caused by slower business activity is, of course, a mixed blessing. If business volume—in metalworking industries, measured chiefly in new orders—picks up in the next few months and the price fever continues to cool, then chances of an upbeat second half look better than good—they look great.

In March, for the product lines listed on the table here, the heftiest price hikes were posted for cutting tools and accessories (up 2.2 pct) and for industrial process furnaces and ovens (up 1.8 pct).

It is worth noting that some product lines that have climbed the most steeply in price over the past year or more, are now showing the most promising signs of cooling off.

Latest Month Covered: March, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	338.4	+ 1.0	+12.6
Metal Forming Machine Tools	373.5	+ .8	+11.9
Agricultural Machinery & Equip	278.7	+ .5	+10.6
Construction Machinery & Equip	311.3	+ .9	+11.4
Special Industry Mach. & Equip	300.9	+ .5	+13.3
Industrial Process Furnace & Ovens	322.7	+ 1.8	+13.9
Industrial Material Handling Equip	269.3	+ 1.3	+ 9.0
Pumps, Compressors & Allied Equip	315.2	+ .7	+13.4
Fluid Power Equip	215.0	+ .2	+12.3
Mechanical Power Transmission Equip	284.9	+ .1	+12.5
Automobiles	198.5	− .4	+ 8.7
Motor Trucks—Light	239.7	NC	+13.9
Motor Trucks—Heavy	268.8	− .2	+12.3
Railroad Equipment	335.8	+ .4	+11.2
Fabricated Metal Structural Products	289.4	+ 1.3	+ 9.2
Electric Motors	266.1	+ .2	+ 7.5
Valves & Fittings	304.2	+ 1.3	+ 8.4
Ball & Roller Bearings	293.3	NC	+17.1
Cutting Tools & Accessories	248.5	+ 2.2	+11.1
Heating Equipment	217.6	+ .7	+ 7.4
Plumbing Fixtures & Brass Fittings	259.2	+ .1	+ 6.9
Metal Containers	314.1	+ .1	+ 8.9
Miscellaneous Metal Products	265.7	+ .6	+ 8.8

Data based on U.S. Labor Dept.'s Producer Price Index

CLIMAX MOLYBDENUM: ONE EYE ON THE ECONOMY, THE OTHER ON BIG OIL

The big molybdenum producer is hoping worldwide demand improves fast enough to absorb the added capacity coming onstream this decade.

By Robert J. Regan

Climax Molybdenum Co. shouldn't be blamed for developing a siege mentality when the last piece of its U.S. competition disappears under the cash-rich oil industry's umbrella later this year.

That will be when Kennecott Corp. is merged into Standard Oil Co. of Ohio. The oil industry's other major molybdenum holdings include Anaconda (Atlantic Richfield), Duval (Pennzoil), Molycorp. (Union Oil of California) and Cyprus Mines (Standard Oil Co. of Indiana).

Standard Oil Co. of California, meanwhile, is seeking to acquire 80 pct of Climax Moly's parent, Amax Inc., to add to the 20 pct it already owns. If Socal's bid is successful, this would put all major U.S. molybdenum capacity under the oil industry's wing.

Climax Moly, which dwarfs the competition with its king-sized molybdenum capacity, is wary, no doubt, as one competitor after another finds a rich uncle. But the company's more immediate concern is how quickly the U.S. economy turns around and demand improves sufficiently to reverse the downtrend that forced one price cut already this year.

The medium to long range concerns center on whether demand worldwide will improve fast enough to absorb all the additional capacity that is slated to come onstream during the Eighties. Many recent projections point toward surpluses that suggest that Climax is heading for the same sort of difficulties that Inco Ltd., the nickel giant, has been faced for the past several years after a lot of smaller producers (including Amax) got into the business.

John W. Goth, Amax executive vice president for molybdenum, nickel, tungsten and specialty metals, doesn't think this will happen to molybdenum, however. In an interview at the Climax division's Greenwich, Conn., headquarters, he said, "I think molybdenum has a stronger base than nickel had—and I must point out that we have been through some of that already. If you recall, that new capacity came in handy when demand was running ahead of supply right up to early 1980."

The Eighties, he added, "won't be a whole lot different than the Seventies, even if they bring that new capacity onstream as they are saying they will. If the market goes as we perceive it, that extra output will be needed."

Climax is sticking to its recent projections for a 5 to 5.5 pct annual growth rate, Mr. Goth said. "But," he added, "it looks as though it will be from a somewhat lower base because of the slide that started last year."

Climax calculates that world molybdenum consumption fell 10.4 pct, or 19 million lbs, last year to 164 million lbs. Climax's 1980 production was up 10 million lbs, or 10.9 pct, to 102 million lbs.

Reminded that the division's production was equal to 62.2 pct of total world consumption in 1980 compared with 50.3 pct in 1979, Mr. Goth interrupted with a laugh to say "we didn't increase market share, if that's what you are driving at. We put a lot of molybdenum into inventory, like everybody else did, during the latter part of the year."

Contrasting the hectic scramble for molybdenum during 1979 and early 1980, when Climax's overseas customers were pressing for a larger share of the division's U.S. output, with the current situation, Mr. Goth said "May really zapped all of us and that's when the inventories started to rise."

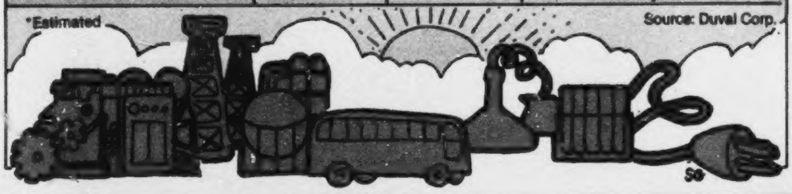
Asked how he saw 1981 shaping up, the Amax executive said demand, "in the U.S. at least, could be slightly higher than last year—that's assum-

Molybdenum Consumption by Major End Users

(Million Lbs. Mo Contained)				Annual Average Pct Growth 1979-1985
Industries	1979	1980*	1985	
Machinery	23.6	24	28.2	3%
Transportation	16.2	12	19.3	3%
Oil & Gas Industries	12.5	14.2	22.1	10%
Chemicals	9.6	9.6	16.1	9%
Electrical	5.9	5.7	7.2	3.3%
Other	5.9	5.9	7.3	3.7%
TOTAL	73.7	71.4	100.2	5.2%

*Estimated

Source: Duval Corp.



New Molybdenum Prospects - 1980-1985

		(Million Lbs. Mo Contained)						
Country	Company	Mine	1980	1981	1982	1983	1984	1985
U.S.A.	Amax	Kitsault		5	9	10	10	10
	Amax	Tolman					5	10
	Amoco	Thompson Creek				5	15	17
	Anaconda	Tonopah			10	12	15	15
	Moly Corp.	New Questa				6	16	20
CANADA	Teck Corp.	Highmont		9	6.5	4.5	4.5	4.5
	Noranda	Granisle	.1	.4	.4	.4	.4	.4
MEXICO	Minera Frisco	Cumobabi	.75	3.5	4	4	4	10
	Mexicana	LaCaridad			2	2	4	4
PERU	S. Peru Copper	Cuajone			1	2	2	2
TOTAL			.85	17.9	29.9	45.9	75.9	92.9

ing a reasonably fast economic recovery. Production will be about the same as last year," he added.

Asked if molybdenum was at or near the center of the "serious antitrust questions" posed by Amax in reference to Socal's repeated bid for control of the company, Mr. Goth said he thought this referred more to the size of the companies than to molybdenum per se. "We're not exactly a small company ourselves, and neither is Socal." Mr. Goth said there were no specific concerns that he was aware of and, besides, it was more a matter for discussion by the corporate, rather than the operating level of Amax.

He said that Climax was very much aware that just about all of its domestic competition will be controlled by the oil producers after Kennecott is merged into Sohio. "And," he noted, "that's all primary mines they have gotten and are getting, not small secondary operations."

Asked if the situation has or will make a difference to Climax in the marketplace, Mr. Goth said, "It has already—at least to the extent that they now have more financial resources available to them for development than might otherwise be available.

"The crux of it all will be whether they will be working their moly operations in a way that will bring them a return on their investment, or whether they will waste their assets by selling below cost when things get tough. This has happened in the past with other metals like copper, lead and zinc—and nickel.

"It could go either way. We, of course, would prefer to have an orderly market with the producers recovering their investments in a profitable business. Maybe things will fall somewhere in between; we'll just have to wait and see. A lot has to do with their timing, like when more capacity is brought onstream, for instance."

Mr. Goth said Climax's plans for getting its reopened Kitsault, B.C. open pit mine onstream are running as scheduled. He said the mine and mill have begun producing commercial grade material and the facility will reach its 1982 goal of 11,000 metric tons of ore processed per day on schedule in 1982. Climax placed a fourth grinding mill in operation at its Henderson, Colo., facility last December and later this year a new primary crushing facility for the Climax open pit will be started up.

In January of this year, Amax and the Colville Confederated Tribes approved the form of a mining lease on the Mount Tolman, Wash., molybdenum-copper project. The next step is to get approval from the Interior Department. Mr. Goth said Interior Secretary James G. Watt hadn't given formal approval as yet, but he thought it was a procedural matter and there was no stymie. Once the Interior Dept. approves the project, it has to be voted on by the Amax board of directors.

Construction of an open pit mine at Mt. Tollman would take three to four years and Climax estimates production could begin and last 40 years. Further down the road is the company's proposed Mount Emmons, Colo., molybdenum project. This one has run into opposition from various local groups, including environmentalists and no-growth groups, but Climax is confident it can reach satisfactory agreements with them when the time comes.

Although many molybdenum analysts see a decade or so of troublesome surpluses ahead, Climax is confident that new industrial requirements and growth in Third World countries will soak up a lot of the projected excess supplies. □

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METALPRODUCING FEATURES

STEEL STILL BATTERED BY OPERATING COSTS OF POLLUTION CONTROL

On an annual basis, operating and maintenance costs are becoming more significant than new capital costs in the steel environmental scheme.

By George J. McManus

Inland's No. 4 AC Station set the EPA standard of .03 lbs. per million btus and is 99.8 pct efficient.

In 1980, Bethlehem Steel Corp. spent $36.2 million on new equipment for environmental quality.

In the same year, the total operating cost of Bethlehem's abatement systems was $180 million or $12 a ton.

The operating total included depreciation charges of $41 million. Excluding this, the continuous cost of environment control was still far greater than the initial capital cost.

Bethlehem's 1980 ratio may not be exactly typical; the company's capital outlay for abatement was over $82 million in 1978; but the thought conveyed by the 1980 numbers is entirely valid. On an annual basis, operating and maintenance costs are becoming more significant than new capital costs in the steel environmental scheme.

If the regulatory process follows its current trajectory, the operating cost for the steel industry's pollution controls will eventually come to over $6 billion a year.

This prospect is causing serious concern. "We have to look at more efficient ways of handling this material," says F. G. Carrick, superintendent of energy, environmental control and solid waste disposal at the Cleveland plant of Jones & Laughlin Steel Corp.

"Putting in huge fans to handle these fugitive emissions doesn't make sense," says Mr. Carrick.

Until recently, the magnitude of continuing environmental cost wasn't fully appreciated. Much more attention went to initial capital cost. On a cumulative basis, the capital figures are massive. Bethlehem has spent $734 million on pollution abatement so far. The latest estimate is that full compliance with air and water codes will bring the steel industry's capital bill to $15 billion.

Understandably, public agitation by steel people has centered on capital requirements. There isn't much the mills can do about the operating costs of existing systems. The mills are hopeful they can scale down or defer future capital costs. Since operating costs flow from capital costs, it is a matter of killing two birds with one stone.

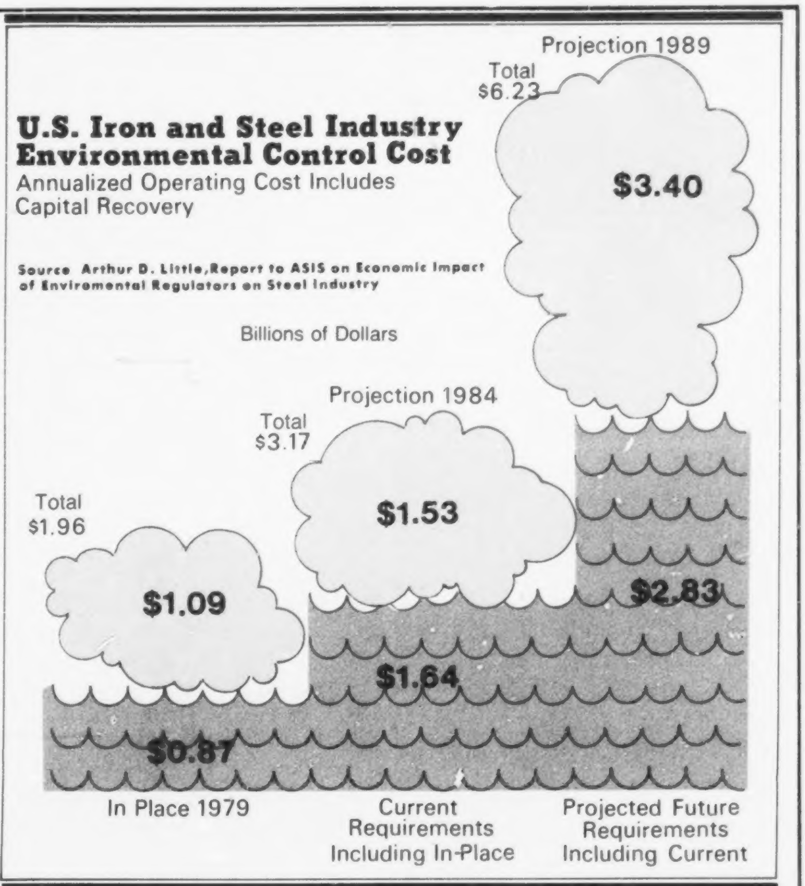
Even in their internal deliberations, however, steel producers have tended to overlook operating and maintenance cost. "It gets buried," says John Barker, director of environmental engineering for Armco, Inc. The large capital numbers are clearly visible to top management and are subject to much scrutiny and evaluation, says Mr. Barker. The cost of operating and maintaining environmental systems does not stand out so clearly.

Another environmental expert says much the same thing. "No one really focuses on total dollars because of the way capital budgets are worked," he explains.

When equipment has been installed, he says, operating cost does register with one group. "The operators start to scream," says the engineer. "You have two different groups looking at the problem."

No one has a precise basis for screaming until after controls have been installed. "You don't know what the operating costs are going to be," says D. M. Anderson, corporate director of environmental affairs for Bethlehem Steel.

This fact, which was vividly illustrated by some of the recent quench car installations, has contributed to the fuzziness surrounding operating costs. The general haze was brought out when the subject was broached with a number of steel companies. The quick response was that operating costs were only 10 to 15 pct of capital costs. It didn't seem to come



U.S. Iron and Steel Industry Environmental Control Cost

Annualized Operating Cost Includes Capital Recovery

Source Arthur D. Little,Report to ASIS on Economic Impact of Enviromental Regulators on Steel Industry

through that operating costs are eternal while capital costs are of a one-shot nature.

Attitudes are changing for a number of reasons. For one thing, the old rule of thumb is obsolete. Inland Steel Co. used to figure the operating cost of an environmental system ran 7 to 9 pct of the initial costs. Today, the continuing cost is placed at 18 to 20 pct of first cost.

"I don't think there is any question, the cost is going to increase," says Donald Lang, director of air and water control for Inland. Labor rates, energy costs, and replacement costs are all going up, Mr. Lang points out.

Inland spent $61 million on new environmental equipment last year. The total opersting expense was $28 million. This mix is probably not representative of the whole industry. Inland completed a mammoth expansion program last year and environment equipment is a large part of any new steel facility. Since 1950, Inland's capital costs for abatement have come to $500 million.

The escalation of energy prices obviously increases the daily cost of capturing pollutants. Compounding the problem is high energy input needed to control the last fraction of dust from a steel process.

"When we get to the incremental stage, we're talking about energy intensive systems," says Mr. Anderson of Bethlehem.

The energy cost of Bethlehem's systems was $42 million in 1980. That was 23 pct of total cost. It was up 68 pct from the $25 million energy cost in 1978. The power consumed by Bethlehem's control systems in 1980 was enough to supply 90,000 homes.

In its pitch for the bubble concept, Armco stressed the energy aspects. To catch the remaining emissions from processes, says Mr. Baker, will require several hundred thousand horsepower. Only a small amount of power will be needed to water dusty roads and take care of other non-traditional sources, he says.

This differential apparently hadn't been considered before. The regulators were startled, Mr. Barker indicates, "when we got to the bottom line on energy."

In the past, the mills have presented examples that show the energy needed to capture the final measure of process dust would generate more pollution at the utility than it would remove at the steel furnace.

In the Bethlehem situation, maintenance and other non-energy costs of abatement came to $97 million in 1980. Maintenance costs can vary widely. At the Warren, Ohio, plant of Copperweld Steel Co., the electric furnace bag house system has been essentially troublefree. Built in 1976 by American Air Filter Co., the system is still using the original set of bags. Scheduled maintenance is performed by one man.

"It's working very well," says F. S. Jackson, combustion and environmental engineer for Copperweld. "The efficiency has been better than the manufacturer's specifications."

On the other hand, the bag house for a coal-fired boiler at Warren has given the plant fits. Exposed to temperatures up to nearly 500°F., the filter system simply hasn't worked. The bags have become clogged. It has been necessary to by-pass much of the system.

"Even now, the technology on coal-fired boilers isn't that advanced," says G. H. Behnke, energy conservation and environment control engineer at Warren.

The Warren plant has put $9 million into environmental equipment. The operating and maintenance cost last year was $1.6 million with more than $1 million of this going to the electric furnace system.

Warren's operating cost does not include future expenses that may be incurred in disposing of dust captured by the electric furnace bag house. This dust is now being stored in plant dump sites. However, electric furnace dust has been classed as hazardous. If it can't be recycled, some sort of special disposal may be necessary.

One of the incidental costs of regulation comes up on electric furnace dust. A plant can be removed from the hazardous class if it can show that its particular dust does not contain toxic substands. However, the process of establishing the purity of emissions is long, tedious and costly.

In line with the bubble theme, Copperweld's experience suggests the simplest abatement methods are the most satisfactory all around. The Warren plant has provided lagoons in which solids settle out and oil skim is removed.

Apart from clarifying water, the lagoons have proved an operating asset. The strainers which take water from a river will periodically become clogged with leaves and small fish. When this happens, water can be drawn at the lagoons and there is no interruption of mill production. Operating and maintenance costs for the lagoon run a little over $93,000 a year.

Copperweld's comments on boiler house technology bring to mind an old cry. When the environmental crusade first heated up, steel producers argued that there was not proven technology to deal with many of their smog problems. This contention was shrugged off by the environmentalists; the mills were accused of using technology as a dodge for stalling.

It turned out the steel statements were correct, possibly more correct than the authors realized. Many of the early systems and some of the recent ones have proved highly unsatisfactory. Until recently, one small electric furnace shop had eight men working full-time on bag house maintenance.

"Within 18 months, the bags were falling down," says G. W. Parks of Pollution Control Services, Inc., in Cleveland. "They weren't meeting the standards." Mr. Parks specializes in dealing with problems of this kind. The problems are widespread, he says.

"Nine times out of ten, it turns out the process has changed," he says. In other cases, the standards have changed. But many of the maintenance headaches stem from flaws in the original equipment. Light sheet was used in hoods and ducts. Systems simply were not properly designed for the jobs they were assigned.

This happened because the mills had to act before there was enough knowledge. "On some of the equipment, we were forced to put something in without having a lot of field trial," says Mr. Anderson.

The Cleveland Works of Jones & Laughlin spent $19 million last year on the operation and maintenance of environmental systems. Of this amount, $6 million was for energy—in a slack year.

Like others, the Cleveland plant is paying a price for being forced to move before technology was fully developed. The plant is now spending $2.5 million to rehabilitate the precipitator on a BOF shop. This is considered a capital cost, but it is a recurring one.

The cleanup system for the BOF is a full combustion type. Had J & L been able to wait, it would have gone to a suppressed combustion model. "All the new BOF shops are going to suppressed combustion," says Mr. Carrick of J & L.

With full combustion, he explains, the system must handle four times more gas than with suppressed combustion. The gas retrieved in the suppressed system can be used as an energy source, he notes.

This kind of thing runs through the environmental program. Mr. Carrick recalls some pioneering J & L did on the recycling of blast furnace cleaning water. Elbow pipes eroded in two or three months. Pump impellers were gone in a week.

J & L's Cleveland plant now working on control of secondary emissions from electric furnaces. "We will be putting in a $19 million bag house," says Mr. Carrick.

The energy cost of the bag house hasn't been pin-pointed yet, but the system will have two 2,000 hp fans capable of moving one million cu. ft. of air a minute.

Like Copperweld, J & L faces problems arising from the classification of electric furnace dust as hazardous. There is no suitable storage area for this dust near the Cleveland plant. As a result, the plant is having the dust hauled to a special site at the company's Aliquippa, Pa., plant. The cost of hauling the material is $32 a ton with at least another $1.50 for work at the disposal site. This compares with a hauling cost of $4 a ton for ordinary solid waste.

The most horrendous example of premature action is in the systems for controlling coke oven pushing emissions. About 10 years ago, a number of mills installed sheds to catch these emissions. There were objections on the grounds that the sheds made for an unhealthy working environment.

"It was a perception," says Mr. Anderson of Bethlehem. The health hazard was never actually established, he indicates.

Before the shed question had been fully explored, the mills turned to specially designed quench cars. There were conventional cars with hood systems. There were one-spot cars with land-based cleaning equipment. There were one-spot cars with on-board cleaning.

As a result of this activity, says Mr. Barker of Armco, two or three generations of technology are coming on stream at the same time.

Some of this technology isn't working out. Excessive maintenance down-

Annualized Operating Cost to Comply with EPA Standards

Billions of 1979 Dollars

	Facilities In-Place	Current Incremental Requirements	Total Current Requirements (Including Facilities In-Place)	Projected Future Incremental Requirements	Total Projected Future Requirements (Including Current Requirements)
Air					
Point Source Particulates	.76	.11	.87	.55	1.42
SO_2, H_2S, NOx Hydrocarbons	.08	.03	.11	.21	.32
Fugitive Particulates	.25	.41	.66	.43	1.09
Total Air	1.09	.55	1.64	1.19	2.83
Water					
Designated	.87	.44	1.31	1.76	3.18
Thermal	—	.11	.11		
Storm Runoff	—	.11	.11	.11	.22
Total Water	.87	.66	1.53	1.87	3.40
Grand Total	**1.96**	**1.21**	**3.17**	**3.06**	**6.23**

The annualized operating costs associated with air and water pollution control facilities inplace in 1979 were estimated, at 26.5 pct of capital investment (in 1979 dollars) in such facilities, to be $1.96 billion. Based on 1979 shipments of 100-million tons, the annualized operating costs amount to $19.60 per ton of shipment. For comparison, the total cost of shipment in 1979 was $396 per ton of finished steel product. Thus, the annualized costs associated with operating in-place environmental control represented about 5 pct of the total costs of shipments in 1979.

Compliance with current requirements by 1984 would represent an annualized operating cost of $3.17 billion or about 29 pct of the capital investment needed for the construction of such facilities.

NOTE: The estimated annualized operating costs associated with the operation of environmental control facilities include a capital recovery factor of 0.16275, representing a 10-year capital recovery with interest at 10 pct.

Source: Arthur D. Little, Report to AISI on economic impact of environmental regulations on Steel Industry.

What's Behind Armco's Bubble Concept

Using EPA developed and approved formulas to measure and quantify all emissions from a total plant Armco was able to construct an alternate control strategy which when applied, achieves environmental goals and conservation of capital and energy simultaneously. The alternate control strategy when applied demonstrated that:

a. 49 pct of all particulate emissions come from unpaved roads, dusty paved roads, open areas and raw materials storage piles.

b. Per ton of particulate controlled the following cost and energy consumption comparisons:

Cost Effective Examples

Iron Oxide Sources	Emission (t/Yr)	Possible Controls	Pct	Reduction (Tons/Year)	Dollar Cost	Annual (Cost/Ton)	kwah Ton of Dust
a) Storage Pile Windloss	473	Spray System	60	(284)	200,000	704	46
b) Blast Furnace Cast House	309	Hoods and Baghouse	95	(294)	3,500,000	11,905	34,600
c) BOF Charging & Tapping	326	Hoods and Baghouse	90	(293)	4,000,000	13,630	39,200
d) Open Hearth Charging & Tapping	79	Hoods and Baghouse	80	(64)	4,000,000	63,992	179,700

Note: Ratio: $\frac{\$63,992}{\$704} = \frac{89}{1}$

Energy Considerations

It should be noted that the energy conserved by controlling windblown fugitive dust versus controlling process fugitive emissions is very significant.

Note: Ratio: $\frac{179,700 \text{ kw hrs/ton}}{46 \text{ kw hrs/ton}} = \frac{3906}{1}$

Facts

"Bubble Concept" versus "Conventional Regulations"
The Arthur D. Little Company of Boston, Massachusetts, made a study of the Environmental Impacts on the American Iron and Steel Industry. Their report, published in May 1978, shows the following impacts:

I. To control "process fugitive emissions" will require a capital investment of $1.88 billion.

II. The operating cost for this equipment will be $320,000,000 per year.

III. This pollution control equipment will consume 2.36 billion kilowatt hours of electrical energy per year.

IV. This amount of electrical energy is equivalent to 4,300,000 barrels of oil per year.

Using Armco's estimates, the control of windblown fugitives would require a capital expenditure of $150-200 million dollars, and a relatively negligible energy consumption.

Source: Armco

time and high fuel costs have been reported. A number of steel producers now favor going back to the shed.

"There's really no consensus on the way to go," says Mr. Anderson. Some 90 different systems are being tried.

Mr. Barker favors a pause for further evaluation. "In those areas like coke pushing," he says, "the EPA administrator could declare a moratorium."

Steel men now see themselves being pushed into another round of spending for unproven technology. The government is calling for control of blast furnace cast house emissions. The systems proposed range from local hoods to complete evacuation of the cast house.

"We're still not sure what the right way is," says Mr. Anderson. The wrong way "could add very significantly to costs," he adds.

Faced with fluid technology, steel men are seeking an extension of environmental deadlines and full acceptance of the bubble concept. Armco has taken the lead in asking that it be allowed to achieve compliance by controlling non-traditional dust sources rather than fugitive emissions.

In making its case, Armco has pointed out that providing sprays for storage piles would cost $200,000. That compares with $4 million to control emissions from openhearth charging and tapping operations. The sprays would reduce dust by 284 tons a year. The openhearth controls would eliminate 64 tons of dust a year.

The figures on operating cost are equally striking. The spray system would take 46 kwh a ton of dust while the openhearth controls would draw more than 179,000 kwh per ton of dust.

There is general awareness that the industry is heading toward staggering yearly costs if enforcement continues on its present course.

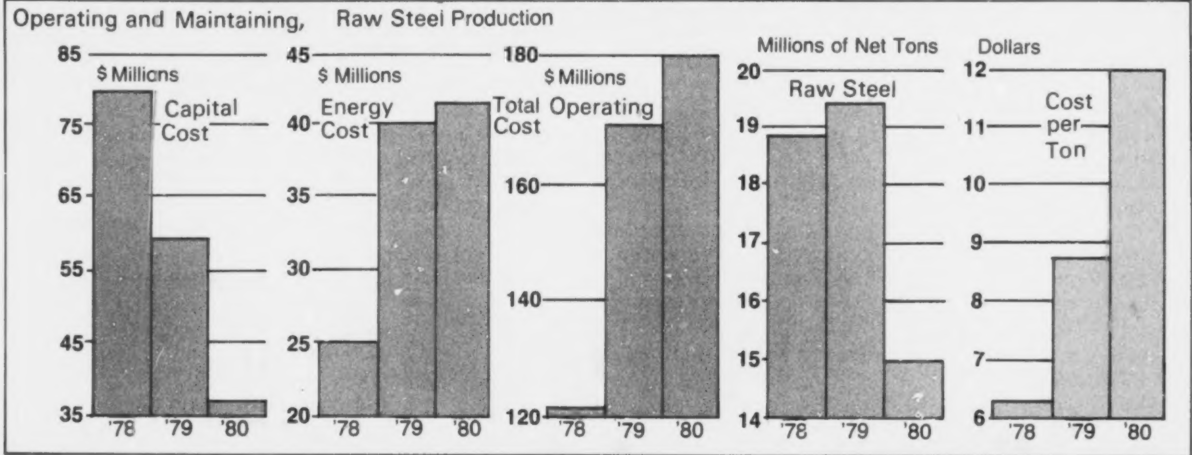
"We have got to come up with better ways," says Mr. Carrick of J & L.

In the study prepared by Arthur D. Little for the American Iron & Steel Institutes, annual operating costs were placed at 26.5 pct of capital costs for abatement facilities in place. That came to $1.96 billion or $19.60 per ton of 1979 shipments. The same cost applied to the lower 1980 shipments would have been more than $23 a ton.

Compliance with current requirements by 1984 would raise the annual operating cost to $3.17 billion. Assuming shipments of 100 million tons, that would be nearly $32 a ton. It would be about 50 pct more than the industry earned in 1979.

(Cont. on p. MP-15)

What Bethlehem Paid in Environmental Cost in '78, '79 & '80



To meet future requirements beyond 1984, the Little study says, the operating costs of steel pollution systems would be raised another $3.06 billion. That would bring the eventual operating total to more than $6 billion The operating cost would come to 36 pct of invested capital for pollution facilities.

The big increase in the period after 1984 would be associated with water systems to achieve zero discharge. In relation to invested capital, the cost of air control systems would be fairly constant.

With the control systems now in place, the operating cost for air purification is $1.1 billion, or more than half the operating total. Future requirements would increase the amount required to operate air systems but would decrease this portion of the total to 45 pct.

As defined in the Little study, operating costs include capital recovery. A 10-day recovery period is used with interest of 11 pct. For facilities in place in 1979, the capital recovery portion of cost came to $1.21 billion. Maintenance and actual operating expenses came to $750 million.

As the capital portion of the job nears completion and facilities are amortized, the yearly physical expenses would become increasingly important. They would be 43 pct of the total in 1984 and 55 pct of the eventual total. The 55 pct is based on yearly costs of $3.42 billion.

As has been noted, the bubble concept reduces both capital and operating costs. The bubble program at Armco's Middletown works calls for storage pile sprays, road paving and treatment, reseeding of barren areas, and a perimeter parking system. The cost is $5.6 million.

The same degree of abatement from process controls would cost $20 million. "I'm convinced that full implementation of the bubble can save literally hundreds of millions of investment dollars for steelmakers alone," says Harry Holiday, chief executive of Armco. ☐

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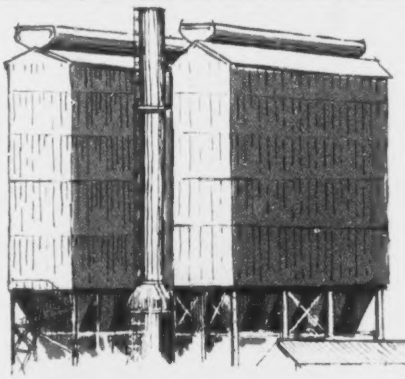
Cost of Operating Pollution Control Facilities at Copperweld

Melt Shop Baghouse	
Operating Expense	$1,143,000.00
Maintenance	80,000.00
Total	**$1,223,000.00**

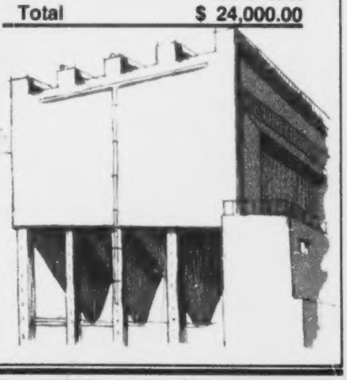
Grinder Baghouse	
Operating Expense	$ 130,000.00
Maintenance	13,600.00
Total	**$ 143,600.00**

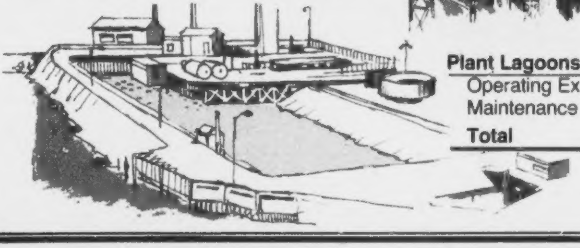
Boiler House Baghouses	
Operating Expense	$ 116,900.00
Maintenance	37,700.00
Total	**$ 154,600.00**



Totals	
Operating Expense	$1,435,100.00
Maintenance	203,300.00
Total	**$1,638,400.00**

35" Mill Precipitator	
Operating Expense	$ 10,000.00
Maintenance	14,000.00
Total	**$ 24,000.00**





Plant Lagoons	
Operating Expense	$ 35,200.00
Maintenance	58,000.00
Total	**$ 93,200.00**

STEELMAKERS FACED WITH SURPLUS IRON ORE

Many major North American steelmakers see no short term end to the iron ore glut and its continuing drain on their profits.

By George J. McManus

"No one put a gun to our head and forced ownership participation," said P. M. Nixon, group vice-president, manufacturing and mining, Algoma Steel Corp., Ltd.

Speaking at the recent Toronto meeting of the AIME Iron and Steel Society, Mr. Nixon was referring to steel mill participation in over-expansion of iron ore capacity.

Last year, this participation left North American mills locked into ore pellet plants that were operating at 70 pct of capacity. "And almost 12 million tons of annual iron ore capacity was completely shut down," says Mr. Nixon.

The result was a severe profit drain. "Our 1980 results in this line of business were terrible," says Armco, Inc. of its raw material operation. "Key troubles came in our iron ore operations."

Armco is 50 pct owner of Reserve Mining Co. The start-up of Reserve's $370-million Mile Post 7 operation contributed to cost problems. Start-up problems forced a 120-day shutdown in 1980.

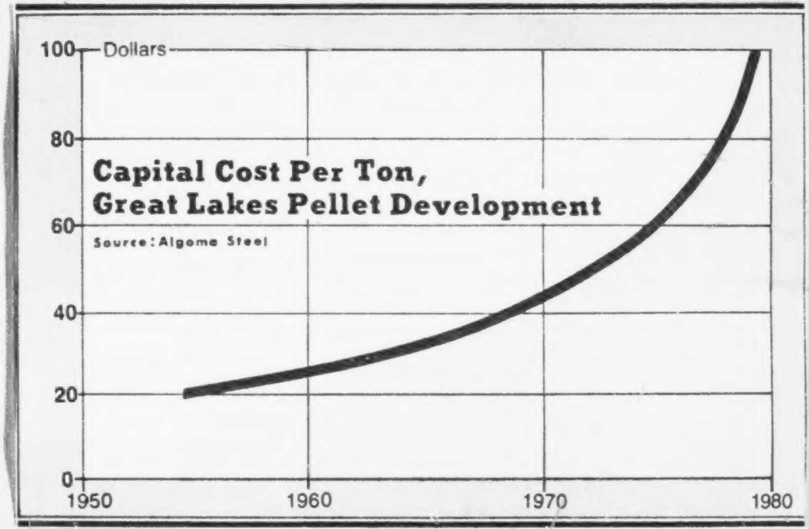
However, Armco also shared in the general industry problem of having more iron ore than the depressed 1980 market required. During the period of uncertainty about Reserve, the company had made commitments for alternate supplies.

Armco began reducing its commitments in 1980. "We hope to do more in 1981 by divesting ourselves of two of our equity positions in iron ore companies," the company says.

Others found themselves with more iron ore than they wanted in 1980. Jones & Laughlin Steel Corp. was thinking in terms of operating its big new electric furnaces at Pittsburgh Works in all markets. In the deep 1980 recession, iron ore commitments forced J&L to reduce electric furnace operations.

Inland Steel Co., with a big blast furnace coming on stream last year and an optimistic forecast, found itself overloaded with iron ore. The subsequent shutdown of ore facilities had a serious impact on earnings.

The 1980 experience brought a general re-thinking of iron ore strategy. "Virtually every steel producer in North America was looking for the opportunity to sell iron ore or to sell part or all of its ownership position in one or more iron ore projects," says Mr. Nixon.



Capital Cost Per Ton, Great Lakes Pellet Development

Source: Algoma Steel

European and Japanese producers also found themselves buried under surplus ore, he says. "The true impact on profit may never be fully documented," he adds, "but it is unlikely that any integrated North American steel producer escaped the cost penalty of underutilized raw material production capacity."

The problem arose from two developments. First, the 1973-74 steel boom gave everyone bullish notions about future demand. Secondly, the move into low grade ores greatly increased the cost of expanding iron capacity.

The cost of a natural ore development came to 50¢ a ton in 1940. By 1950, it was taking $20 an annual ton for facilities to grind, concentrate and pelletize taconite. By 1980, the cost was up to $100 a ton.

The cost climb made independent ore companies unwilling to go it alone in pellet ventures. As a result, North American steel companies began entering into joint ventures with ore companies and other steel producers. The captive portion of ore production rose from 23 pct in 1950 to 79 pct by 1980. Algoma, says Mr. Nixon ruefully, obtained 88 pct of its ore from captive sources last year.

An advantage of the joint ventures was that they could be financed largely by debt. This was possible because a high level of production was assured by the take-or-pay contracts of participants.

The contracts and the debts tended to make ore supply inflexible. Production had to be high or there were tough cost penalties. This was no problem in the Fifties and Sixties when supply more than kept pace with demand. Supply was limited. The beneficial effects of pellets on blast furnace performance created unlimited demand.

As a result, U.S. and Canadian production of pellets rose from zero in 1950 to 77 million tons in 1970. Japan's imports of iron ore rose from 15 million tons in 1960 to 102 million tons in 1970. Unlike North American mills, however, the Japanese favored sintering at the steel plant rather than pelletizing at the mine.

Everything was fine until the boom of 1973 and 1974 created delusions of sustained expansion of the steel market. Concern for the supply of raw materials was heightened by the oil crunch. There was talk of an iron ore cartel, similar to OPEC.

There was a rush to expand pellet capacity. The recession of 1975 halted much of the steel industry's expansion but it didn't slow the ore rush. "Construction continued on the multimillion dollar projects such as Tilden, Empire, Hibtac, Minorca and Mintac," says Mr. Nixon. The pellet capacity of the U.S. and Canada rose from 77 million tons in 1970 to 126 million tons in 1980. Steel shipments of U.S. producers fell from over 90 million tons in 1970 to less than 84 million tons in 1980.

The world supply has been boosted by Brazil's massive iron ore expansion. Total Free World ore capacity is now around 670 million metric tons. The 1980 requirement was around 585 million metric tons (*IA*, Aug. 4, '80, p. MP-3). Iron ore people say it will be 1985 at the earliest before demand catches up with supply.

The main supply route for many North American steelmakers is still the Great Lakes. That system dates back to the last century but has been modernized during the past 20 years to provide cheap and efficient shipping of Upper Lakes ore to Lower Lakes steel mills. In terms of exporting, however, the Lakes' carriers are unsuitable for the oceans and small fry compared to the 200,000-ton carriers plowing the high seas.

Even if there were an export market, most of the North American ore mines would be frozen out by shipping limitations. The Great Lakes system can't accommodate the large ore carriers needed for competitive ocean shipping.

What makes oversupply so painful is that iron ore prices have skyrocketed. After 20 years of relative stability, the ore pellet price rose from 27¢ an iron unit in 1970 to 74¢ in 1980.

Steel companies must pay the 74¢ for large quantities whether they take them or not.

Mr. Nixon feels something must be done about the situation. "This is no time for legalistic contract interpretations," he says.

"We all know that eventually the supply of iron must be matched to demand."

Unless demand rises, he argues, iron ore production must somehow be reduced. He acknowledges that the 1980 experience may have caused some over-reaction. "We are all somewhat gun shy," he says. "We must always remember that the foundation of our industry is a reliable supply of raw materials of competitive chemistry and cost."

One great potential strength of the American steel industry has been ownership of nearby coal and iron ore sources.

In a weak market, however, this ownership tends to be a drag rather than an asset.

Independent Iron Ore Producer

	Captive	For Sale
1950	23 pct	77 pct
1960	29 pct	71 pct
1970	72 pct	28 pct
1980	79 pct	21 pct

Algoma Steel Iron Ore

	Captive	For Sale
1950	18 pct	82 pct
1960	31 pct	69 pct
1970	82 pct	18 pct
1980	88 pct	12 pct

U.S. and Canada Iron Ore Shipments

1950	0 pct Pellets
1960	13 pct Pellets
1970	58 pct Pellets
1980	73 pct Pellets

Pellet Production Capacity

1950	0
1960	17 million G.T.
1970	77 million G.T.
1980	126 million G.T.

Source: Algoma Steel

A number of mills have elected to trade the potential of coal reserves for cash in hand. Iron ore properties now seem due for the same treatment.

It's difficult to see how the ore problem can be happily resolved as long as steel shipments can drop from over 100 million tons in one year to under 84 million tons the next.

Whether iron ore is owned or purchased, there has to be a fixed obligation, says E. G. Jaicks, chairman of Inland Steel. He doubts that outside purchases can be made in quantity without strings. "I assume these people have some sort of liability," he says.

Inland has just expanded its blast furnace capacity and is not planning to sell any iron ore properties.

Mr. Nixon believes joint participation in iron ore projects must continue. "Perhaps the greatest change will be that new raw material projects will be justified and evaluated on the basis of cyclical demand rather than the assumption that 100 pct capacity will be utilized at all times." ☐

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Trends in Metalproducing

In its continuing coverage of metal producing *Iron Age* has in recent months published the following articles:

U.S. Coke Oven Capacity Reaches the Crisis Stage
Mar. 3, '80, p. MP-5

Foundry Industry's Push to 'Start-to-Finish' Castings
April 7, '80, p. MP-7

Mini-Mills Are Making Noises in a Big Way
May 5, '80, p. MP-5

Three Forces Shaped Development of Steel Rolling
June 2, '80, p. MP-3

Steelmakers Are Attracted To New Forms of Heat Recuperation
July 7, '80, p. MP-1

Is World Iron Ore Capacity Overbuilt?
Aug. 4, '80, p. MP-3

In Search of Excellence in Steel—the Star Performers
Sept. 1 '80, p. MP-1

Roll Makers Roll With the Marketplace Changes
Oct. 6, '80, p. MP-7

Search Is On For Better Refractories
Nov. 3, '80, p. MP-7

Allegheny Ludium at Leading Edge of Pollution Control
Dec. 1, '80, p. MP-6

Steel Producers Search for a Hot Connection
Jan. 5 '81, P. MP-7

Continuous Casting Continues To Evolve New Techniques
Feb. 2 '81, p. MP-7

Mastering Blast Furnace Technology
March 2, '81, p. MP-7

Foundries Pour Money Into Improvements
April 6, '81, p. MP-9

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	307	299	295	272
Buffalo	69	74	68	64
Pittsburgh	467	444	435	455
Youngstown	147	154	130	129
Cleveland	187	185	172	155
Detroit	178	181	186	179
Chicago	589	648	656	640
Cincinnati	115	117	107	110
St. Louis	101	100	100	87
Southern	272	258	262	267
Western	163	155	149	167
U.S. Production	2,595	2,615	2,560	2,525

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective April 13, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,595	2,615	36,249	35,631
Capability Utilization Rate	86.7	87.4	83.9	83.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.598	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$102.50	$104.17	$105.17	$96.50
No. 2 bundles	$ 75.50	$ 75.50	$ 72.83	$ 62.50

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$111.50	$114.50	$117.50	$101.50
No. 1 steel, Philadelphia	91.50	91.50	91.50	95.50
No. 1 steel, Chicago	104.50	106.50	106.50	92.50
No. 1 bundles, Detroit	108.50	108.50	106.50	95.50
Low Phos., Youngstown	113.50	113.50	113.50	111.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	104.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	133.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	139.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective April 13, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	83.60-88.00	84.35-88.00	4/13/81
Lead	38.00	36.00	4/ 8/81
		36.00	4/ 8/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	43.50-43.75	41.50-43.75	3/27/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette. Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$473.75
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$410-$420
Molybdenum. lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$140
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$10.90
Thorium Pellets	$15.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

April 6—620.72
April 7—611.59
April 8—616.22
April 9—615.45
April 10—611.11

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	84½	75¼
Yellow brass	71	65⅞
Red brass	77¼	70¾
Comm. bronze	79¼	72¼
Mang. bronze	69	67¼
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	78
No. 2 copper wire	68
Light copper	59

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74	
No. 2 copper wire	64	
Light copper	55	
No. 1 composition	71	
No. 1 comp. turnings	69	
Hvy. yellow brass solids	43	
Hvy. yellow brass turnings	33	
Radiators	53	
Aluminum		
New mixed clips	41	—42
Old sheet	36	—37
Old cast	36	—37
Clean dry borings	37	—38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE APRIL 13, 1981

MATERIALS NEWSFRONT

(Effective April 13, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$111.00	to	$112.00
No. 2 hvy. melting	102.00	to	103.00
No. 1 dealer bundles	127.00	to	128.00
No. 1 factory bundles (auto)	129.00	to	130.00
No. 2 bundles	81.00	to	82.00
No. 1 busheling	126.00	to	127.00
Machine shop turn.	39.00	to	40.00
Shoveling turnings	65.00	to	66.00
Cast iron borings	64.00	to	65.00
Low phos. punchings plate	129.00	to	130.00
Heavy turnings	102.00	to	103.00
No. 1 RR hvy. melting	124.00	to	125.00
Rails, 2 ft. and under	133.00	to	134.00
Scrap rails, random lgth.	115.00	to	116.00
RR specialties	130.00	to	131.00
No. 1 machinery cast	104.00	to	105.00
Cupola cast	97.00	to	98.00
Heavy breakable cast	39.00	to	40.00
Stainless			
18-8 bundles and solids	720.00	to	730.00
18-8 turnings	615.00	to	620.00

Chicago

No. 1 hvy. melting	$104.00	to	$105.00
No. 2 hvy. melting	97.00	to	98.00
No. 1 dealer bundles	122.00	to	123.00
No. 1 factory bundles (auto)	132.00	to	133.00
No. 2 dealer bundles	84.00	to	85.00
Unburned bundles	69.00	to	70.00
No. 1 busheling	111.00	to	112.00
Shredder scrap	109.00	to	110.00
Machine shop turn.	54.00	to	55.00
Mixed bor. and turn.	55.00	to	56.00
Shoveling turnings	58.00	to	59.00
Cast iron borings	77.00	to	78.00
Low phos. forge crop	129.00	to	130.00
Low. phos. punchings plate ¼ in. and heavier	137.00	to	138.00
Low phos. 2 ft. and under	132.00	to	133.00
No.1 RR hvy. melting	109.00	to	110.00
Scrap rails, random lgth.	103.00	to	104.00
Reroller rails	129.00	to	130.00
Rails, 2 ft. and under	134.00	to	135.00
RR couplers and knuckles	126.00	to	127.00
RR car axles	164.00	to	165.00
No. 1 machinery cast	129.00	to	130.00
Cupola cast	119.00	to	120.00
Stove plate	114.00	to	115.00
Steel car wheels	130.00	to	131.00
Stainless			
18-8 bundles and solids	685.00	to	695.00
18-8 turnings	550.00	to	560.00
430 bundles and solids	155.00	to	165.00
430 turnings	80.00	to	85.00

Philadelphia

No. 1 hvy. melting	$ 90.00	to	$ 93.00
No. 2 hvy. melting	79.00	to	82.00
No. 1 dealer bundles	111.00	to	114.00
No. 2 dealer bundles	59.00	to	62.00
No. 1 busheling	109.00	to	112.00
Shredder scrap	103.00	to	106.00
Machine shop turn.	38.00	to	41.00
Mixed bor. and turn.	38.00	to	41.00
Shoveling turnings	56.00	to	59.00
Clean cast chemical borings	69.00	to	72.00
Low phos. 5 ft. and under	105.00	to	108.00
Low phos. 2 ft. punchings	124.00	to	127.00
Electric furnace bundles	124.00	to	127.00
RR specialties	106.00	to	109.00
Rails, 2 ft. and under	124.00	to	127.00
Cupola cast	87.00	to	90.00
Heavy breakable cast	67.00	to	70.00
No. 1 machinery cast	120.00	to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00	to	$ 86.00
No. 2 hvy. melting	82.00	to	83.00
No. 1 dealer bundles	108.00	to	109.00
No. 2 bundles	53.00	to	54.00
No. 1 busheling	105.00	to	106.00
Drop forge flashings	83.00	to	84.00
Machine shop turn.	46.00	to	47.00
Mixed borings and turn.	43.00	to	44.00
Shoveling turnings	48.00	to	49.00
Cast iron borings	44.00	to	45.00
Heavy breakable cast	69.00	to	70.00
Mixed cupola cast	84.00	to	85.00
Automobile cast	115.00	to	116.00
Stainless			
18-8 bundles and solids	680.00	to	690.00
18-8 turnings	540.00	to	550.00
430 bundles and solids	165.00	to	175.00

Youngstown

No. 1 hvy. melting	$107.00	to	$108.00
No. 2 hvy. melting	78.00	to	79.00
No. 1 dealer bundles	108.00	to	109.00
No. 2 dealer bundles	74.00	to	75.00
Machine shop turnings	24.00	to	25.00
Shoveling turnings	30.00	to	31.00
Low phos. plate	113.00	to	114.00
Electric furnace bundles	113.00	to	114.00
Galvanized bundles	100.00	to	101.00

Cleveland

No. 1 hvy. melting	$102.00	to	$103.00
No. 2 hvy. melting	67.00	to	68.00
No. 1 dealer bundles	109.00	to	110.00
No. 1 factory bundles	118.00	to	119.00
No. 2 bundles	50.00	to	51.00
No. 1 busheling	105.00	to	106.00
Machine shop turn.	34.00	to	35.00
Mixed bor. and turn.	34.00	to	35.00
Shoveling turnings	38.00	to	39.00
Cast iron borings	34.00	to	35.00
Cut structural & plates, 2 ft. and under	135.00	to	136.00
Low phos. punchings plate	135.00	to	136.00
Drop forge flashings	69.00	to	70.00
Foundry steel, 2 ft. & under	105.00	to	106.00
No. 1 RR hvy. melting	120.00	to	121.00
Rails, 2 ft. and under	140.00	to	141.00
Rails, 18 in. and under	141.00	to	142.00
Steel axle turnings	81.00	to	82.00
Railroad cast	135.00	to	136.00
No. 1 machinery cast	135.00	to	136.00
Cupola cast	115.00	to	116.00
Stove plate	90.00	to	91.00
Stainless			
18-8 bundles	600.00	to	610.00
18-8 turnings	475.00	to	500.00
430 bundles	150.00	to	160.00

Buffalo

No. 1 hvy. melting	$ 72.00	to	$ 73.00
No. 2 hvy. melting	60.00	to	61.00
No. 1 busheling	79.00	to	80.00
No. 1 dealer bundles	77.00	to	78.00
No. 2 dealer bundles	49.00	to	50.00
Machine shop turn.	17.00	to	18.00
Mixed bor. and turn.	26.00	to	27.00
Shoveling turnings	28.00	to	29.00
Cast iron borings	26.00	to	27.00
Low phos. plate	105.00	to	106.00
Structural and plate, 2 ft. and under	113.00	to	114.00
Rails, 2 ft. and under	91.00	to	92.00
Scrap rails, random lgth.	71.00	to	72.00
No. 1 machinery cast	111.00	to	112.00
No. 1 cupola cast	79.00	to	80.00

St. Louis

No. 1 hvy. melting	$ 98.00	to	$ 99.00
No. 2 hvy. melting	86.00	to	87.00
Foundry steel, 2 ft.	86.00	to	87.00
No. 1 dealer bundles	98.00	to	99.00
No. 2 bundles	81.00	to	82.00
Machine shop turn.	22.00	to	23.00
Shoveling turnings	25.00	to	26.00
Cast iron borings	35.00	to	36.00
No. 1 RR hvy. melting	98.00	to	99.00
Rails, random length	95.00	to	96.00
Rails, 18 in. and under	115.00	to	116.00
RR specialties	98.00	to	99.00
Cupola cast	82.00	to	83.00
Heavy breakable cast	53.00	to	54.00
Stove plate	89.00	to	90.00
Cast iron car wheels	59.00	to	60.00
Rerolling rails	117.00	to	118.00
Unstripped motor blocks	65.00	to	66.00

Birmingham

No. 1 heavy melting	$ 99.00	to	$100.00
No. 2 heavy melting	90.00	to	91.00
No. 1 dealer bundles	101.00	to	102.00
No. 2 bundles	76.00	to	77.00
No. 1 busheling	99.00	to	100.00
Shredder scrap	106.00	to	107.00
Machine shop turn.	36.00	to	37.00
Shoveling turnings	50.00	to	51.00
Cast iron borings	49.00	to	50.00
Electric furnace bundles	98.00	to	99.00
Elec. furnace, 3 ft. & under	90.00	to	91.00
Structural and plate, 2 ft.	115.00	to	116.00
Structural and plate, 4 ft.	111.00	to	112.00
No. 1 RR hvy. melting	98.00	to	99.00
Scrap rails, random lgth.	99.00	to	100.00
Rails, 18 in. and under	118.00	to	119.00
Angles and splice bars	109.00	to	110.00
No. 1 cupola cast	104.00	to	105.00
Unstripped motor blocks	75.00	to	76.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00	to	$ 81.00
No. 2 hvy. melting	74.00	to	75.00
No. 1 dealer bundles	96.00	to	97.00
No. 2 bundles	60.00	to	61.00
Machine shop turn.	17.00	to	18.00
Shoveling turnings	30.00	to	31.00
Cast iron borings	30.00	to	31.00
Low phos. 18 in. and under	123.00	to	124.00
Rails, random length	98.00	to	99.00
Rails, 2 ft. and under	117.00	to	118.00
No. 1 cupola cast	82.00	to	83.00
Heavy breakable cast	40.00	to	41.00
Drop broken cast	108.00	to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00	to	$ 53.00
No. 2 hvy. melting	47.00	to	48.00
No. 2 dealer bundles	42.00	to	44.00
Mixed bor. and turn.	7.00	to	8.00
Machine shop turn.	9.00	to	11.00
Shoveling turnings	21.00	to	22.00
Clean cast. chem. borings	34.00	to	35.00
No. 1 machinery cast	94.00	to	95.00
Mixed yard cast	66.00	to	69.00
Heavy breakable cast	17.00	to	18.00
Stainless			
18-8 prepared solids	660.00	to	680.00
18-8 turnings	560.00	to	580.00
430 prepared solids	120.00	to	140.00
410 solids	110.00	to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00	to	$ 76.00
No. 2 hvy. melting	65.00	to	67.00
No. 1 dealer bundles	84.00	to	86.00
No. 2 bundles	38.00	to	40.00
No. 1 busheling	84.00	to	86.00
Shredder scrap	86.00	to	88.00
Machine shop turn.	12.00	to	14.00
Shoveling turnings	24.00	to	26.00
No. 1 machinery cast	140.00	to	145.00
Mixed cupola cast	66.00	to	68.00
Heavy breakable cast	16.00	to	18.00

San Francisco

No. 1 hvy. melting	$ 80.00	to	$ 82.00
No. 2 hvy. melting	70.00	to	72.00
No. 1 dealer bundles	65.00	to	67.00
No. 2 dealer bundles	50.00	to	52.00
Machine shop turn.	10.00	to	12.00
Cast iron borings	10.00	to	12.00
No. 1 cupola cast	110.00	to	112.00

Los Angeles

No. 1 hvy. melting	$ 72.00	to	$ 74.00
No. 2 hvy. melting	62.00	to	64.00
No. 1 dealer bundles	59.00	to	61.00
No. 2 dealer bundles	42.00	to	44.00
Machine shop turn.	12.00	to	14.00
Shoveling turnings	17.00	to	19.00
Cast iron borings	12.00	to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00	to	114.00
No. 1 cupola cast	118.00	to	120.00

Seattle

No. 1 hvy. melting	$ 94.00	to	$ 96.00
No. 2 hvy. melting	83.00	to	85.00
No. 2 bundles	70.00	to	72.00
No. 1 cupola cast	110.00	to	112.00
Mixed yard cast	100.00	to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00	to	$108.00
No. 2 hvy. melting	99.00	to	100.00
No. 2 bundles	63.00	to	64.00
Machine shop turn.	26.00	to	27.00
Crushed turnings	50.00	to	51.00
Shredder scrap	107.00	to	108.00
Cut structural plate 2 ft. and under	124.00	to	125.00
Unstripped motor blocks	89.00	to	90.00
Cupola cast	106.00	to	107.00

EFFECTIVE APR. 20, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	307	307	299	280
Buffalo	72	69	65	61
Pittsburgh	463	467	425	429
Youngstown	153	147	131	136
Cleveland	182	187	187	165
Detroit	183	178	186	184
Chicago	592	589	650	609
Cincinnati	109	115	117	122
St. Louis	102	101	102	78
Southern	261	272	261	267
Western	157	163	147	165
U.S. Production	2,581	2,595	2,570	2,496

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective April 20, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,581	2,595	38,830	38,107
Capability Utilization Rate	86.3	86.7	84.1	83.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.598	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$100.50	$102.50	$105.17	$95.83
No. 2 bundles	$ 75.50	$ 75.50	$ 72.83	$ 61.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$108.50	$111.50	$117.50	$101.50
No. 1 steel, Philadelphia	88.50	91.50	91.50	95.50
No. 1 steel, Chicago	104.50	104.50	106.50	90.50
No. 1 bundles, Detroit	108.50	108.50	106.50	95.50
Low Phos., Youngstown	109.50	113.50	113.50	108.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	104.50
No. 1 mach'y cast., Phila.	121.50	121.50	121.50	130.50
No. 1 mach'y cast., Chi	127.50	129.50	129.50	139.50

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*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective April 20, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	83.30-85.00	82.90-85.00	4/17/81
Lead	38.00	36.00	4/ 8/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	43.50-43.75	41.50-43.75	3/27/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$477.00
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y	$420-$430
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz	$11.13
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

April 13—602.12
April 14—596.94
April 15—597.14
April 16—592.03
April 17—Holiday

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	83½	74¼
Yellow brass	70⅞	65¾
Red brass	76¾	70¼
Comm. bronze	78⅝	71⅝
Mang. bronze	69¼	67½
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	78
No. 2 copper wire	68
Light copper	59

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	64
Light copper	55
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	33
Radiators	53

Aluminum

New mixed clips	41	—42
Old sheet	36	—37
Old cast	36	—37
Clean dry borings	37	—38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE APRIL 20, 1981

MATERIALS NEWSFRONT

(Effective April 20, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$108.00 to	$109.00
No. 2 hvy. melting	98.00 to	99.00
No. 1 dealer bundles	122.00 to	123.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 bundles	81.00 to	82.00
No. 1 busheling	122.00 to	123.00
Machine shop turn.	39.00 to	40.00
Shoveling turnings	65.00 to	66.00
Cast iron borings	64.00 to	65.00
Low phos. punchings plate	129.00 to	130.00
Heavy turnings	98.00 to	99.00
No. 1 RR hvy. melting	124.00 to	125.00
Rails, 2 ft. and under	133.00 to	134.00
Scrap rails, random lgth.	115.00 to	116.00
RR specialties	130.00 to	131.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	720.00 to	730.00
18-8 turnings	615.00 to	620.00

Chicago

No. 1 hvy. melting	$104.00 to	$105.00
No. 2 hvy. melting	97.00 to	98.00
No. 1 dealer bundles	119.00 to	120.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 dealer bundles	84.00 to	85.00
Unburned bundles	69.00 to	70.00
No. 1 busheling	111.00 to	112.00
Shredder scrap	109.00 to	110.00
Machine shop turn.	54.00 to	55.00
Mixed bor. and turn.	55.00 to	56.00
Shoveling turnings	58.00 to	59.00
Cast iron borings	79.00 to	80.00
Low phos. forge crop	127.00 to	128.00
Low. phos. punchings plate ¼ in. and heavier	135.00 to	136.00
Low phos. 2 ft. and under	130.00 to	131.00
No.1 RR hvy. melting	109.00 to	110.00
Scrap rails, random lgth.	103.00 to	104.00
Reroller rails	129.00 to	130.00
Rails, 2 ft. and under	134.00 to	135.00
RR couplers and knuckles	126.00 to	127.00
RR car axles	174.00 to	175.00
No. 1 machinery cast	127.00 to	128.00
Cupola cast	119.00 to	120.00
Stove plate	114.00 to	115.00
Steel car wheels	128.00 to	129.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 87.00 to	$ 90.00
No. 2 hvy. melting	76.00 to	79.00
No. 1 dealer bundles	111.00 to	114.00
No. 2 dealer bundles	59.00 to	62.00
No. 1 busheling	109.00 to	112.00
Shredder scrap	100.00 to	103.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	69.00 to	72.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	125.00 to	128.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	87.00 to	90.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	108.00 to	109.00
No. 2 bundles	53.00 to	54.00
No. 1 busheling	105.00 to	106.00
Drop forge flashings	83.00 to	84.00
Machine shop turn.	46.00 to	47.00
Mixed borings and turn.	43.00 to	44.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	115.00 to	116.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	76.00 to	77.00
No. 1 dealer bundles	103.00 to	104.00
No. 2 dealer bundles	71.00 to	72.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	109.00 to	110.00
Electric furnace bundles	109.00 to	110.00
Galvanized bundles	96.00 to	97.00

Cleveland

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	109.00 to	110.00
No. 1 factory bundles	118.00 to	119.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	105.00 to	106.00
Machine shop turn.	27.00 to	28.00
Mixed bor. and turn.	27.00 to	28.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	27.00 to	28.00
Cut structural & plates, 2 ft. and under	135.00 to	136.00
Low phos. punchings plate	135.00 to	136.00
Drop forge flashings	69.00 to	70.00
Foundry steel, 2 ft. & under	105.00 to	106.00
No. 1 RR hvy. melting	120.00 to	121.00
Rails, 2 ft. and under	140.00 to	141.00
Rails, 18 in. and under	141.00 to	142.00
Steel axle turnings	81.00 to	82.00
Railroad cast	135.00 to	136.00
No. 1 machinery cast	135.00 to	136.00
Cupola cast	115.00 to	116.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 busheling	79.00 to	80.00
No. 1 dealer bundles	77.00 to	78.00
No. 2 dealer bundles	49.00 to	50.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	26.00 to	27.00
Low phos. plate	105.00 to	106.00
Structural and plate, 2 ft. and under	113.00 to	114.00
Rails, 2 ft. and under	91.00 to	92.00
Scrap rails, random lgth.	71.00 to	72.00
No. 1 machinery cast	111.00 to	112.00
No. 1 cupola cast	79.00 to	80.00

St. Louis

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	86.00 to	87.00
Foundry steel, 2 ft.	86.00 to	87.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	81.00 to	82.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	98.00 to	99.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 97.00 to	$ 98.00
No. 2 heavy melting	87.00 to	88.00
No. 1 dealer bundles	97.00 to	98.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	97.00 to	98.00
Shredder scrap	105.00 to	106.00
Machine shop turn.	36.00 to	37.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	49.00 to	50.00
Electric furnace bundles	97.00 to	98.00
Elec. furnace, 3 ft. & under	87.00 to	88.00
Structural and plate, 2 ft.	114.00 to	115.00
Structural and plate, 4 ft.	108.00 to	109.00
No. 1 RR hvy. melting	97.00 to	98.00
Scrap rails, random lgth.	99.00 to	100.00
Rails, 18 in. and under	116.00 to	117.00
Angles and splice bars	109.00 to	110.00
No. 1 cupola cast	100.00 to	101.00
Unstripped motor blocks	72.00 to	73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	60.00 to	61.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	123.00 to	124.00
Rails, random length	98.00 to	99.00
Rails, 2 ft. and under	117.00 to	118.00
No. 1 cupola cast	82.00 to	83.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	108.00 to	109.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 52.00 to	$ 53.00
No. 2 hvy. melting	47.00 to	48.00
No. 2 dealer bundles	42.00 to	44.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	9.00 to	11.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	66.00 to	69.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	660.00 to	680.00
18-8 turnings	560.00 to	580.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to	$ 76.00
No. 2 hvy. melting	65.00 to	67.00
No. 1 dealer bundles.	84.00 to	86.00
No. 2 bundles	38.00 to	40.00
No. 1 busheling	84.00 to	86.00
Shredder scrap	86.00 to	88.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	24.00 to	26.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	66.00 to	68.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 79.00 to	$ 81.00
No. 2 hvy. melting	69.00 to	71.00
No. 1 dealer bundles	64.00 to	66.00
No. 2 dealer bundles	49.00 to	51.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to	$ 74.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	59.00 to	61.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	118.00 to	120.00

Seattle

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	84.00 to	86.00
No. 2 bundles	71.00 to	73.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast.	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to	$108.00
No. 2 hvy. melting	99.00 to	100.00
No. 2 bundles	63.00 to	64.00
Machine shop turn.	26.00 to	27.00
Crushed turnings	50.00 to	51.00
Shredder scrap	107.00 to	108.00
Cut structural plate 2 ft. and under	124.00 to	125.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	106.00 to	107.00

STEEL PRICES

Codes identify Producers listed in the Key on page 126. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$409.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	21.10
U1	20.40
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	22.15
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	22.15
C6	20.15
South	
A7	18.1

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
A7	18.45
D1	19.50
S1, J3, D1	19.50
W3	19.50
N4	17.50
W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	20.00
B3	23.55
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	29.75
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	29.75
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	21.70
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	37.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	20.00
K1	20.00
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	25.75
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	25.00
Long-Terne, Midwest	
W5	35.85
A7, U1	25.35
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	20.85
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	**per base box**
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	16.17
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	20.60
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	29.70
C2	23.025
M9, W10, T11, S8	29.50
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5(2), W10, L2, Y1, W8, R3	29.20
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	29.75
West	
B6	33.40
B6	30.45
R3	30.45-33.40
South	
B5	31.35
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	24.85
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	33.45
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.45
T11, S8	33.20
C10	30.60
Midwest	
B5(2), R3, C10	32.90
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	32.90
B5	33.45
West	
R3	34.55-36.60
B6	33.55
B6	36.60
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	23.25
Midwest	
A7, B3, G3, R3, G2, S1	23.25
I3, U1, W8, I4, W5	23.25
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	21.75
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	24.20
K2	24.20
South	
U1	25.65
A8	17.60
West	
C6	21.20

STEEL PRICES

Producer Key
With Principal Offices

A4 American Cladmetals Co., Carnegie, Pa.
A7 Armco Inc., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A11 Atlantic Wire Co., Branford, Conn.

B1 Baron Drawn Steel Corp., Toledo, Ohio
B3 Bethlehem Steel Corp., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Bliss & Laughlin Steel Co., Los Angeles

C1 Calstrip Corp., Los Angeles
C2 Central States Precision Steel Co., Wichita, Kansas
C6 CF&I Steel Corp., Pueblo, Colo.
C10 Copperweld Steel Co., Warren, Ohio
C11 Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Co., Birmingham, Ala.
C20 Calumet Steel Div., Chicago Heights, Ill.
C21 Cumberland Steel Co., Cumberland, Md.

D1 Detroit Strip Div., Cyclops Corp.
D2 Driver Wilber B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.

E3 Enamel Products & Plating Co., McKeesport, Pa.
E4 Elliot Bros. Steel Co., New Castle, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.
G6 Gibraltar Steel Corp., Buffalo, N. Y.
G7 Georgetown Steel Corp., Georgetown, S.C.
G8 Guterl Special Steel Corp

H1 Hercules Drawn Steel Corp., Livonia, Mich.

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Steel Corp., Chicago

J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Consolidated Industries, Inc.
K3 Kentucky Electric Steel Co., Ashland, Kentucky
K5 Kemco Div., Foote Mineral Co., Keokuk, Iowa

L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
L5 Litho-Strip Corp., Chicago

M1 Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2 McLouth Steel Corp., Detroit
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M8 Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
M11 Midwest Steel Div., National Steel Corp., Portage, Ind.

N1 Northeast Precision Steel Co., Boston, Mass.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle, Wash.
N9 Nelson Steel & Wire Co., Chicago, Ill.
N10 North Star Steel Co., Saint Paul, Minnesota

O2 Oregon Steel Mills, Portland, Ore.

P2 Phoenix Steel Corp., Claymont, Del.
P3 Wyckoff Steel Div., Plymouth, Mich.
P9 Pacific States Steel Co., Niles, Cal.
P13 Penn Dixie Steel Corp., Kokomo, Ind.
P14 Pacific Tube Co., Los Angeles
P15 Philadelphia Steel and Wire Corp., Phila.

R3 Republic Steel Corp., Cleveland
R4 Ramco Steel Co., Buffalo, N. Y.
R5 Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S10 Seneca Steel Service, Buffalo, N. Y.
S16 Southern Precision Steel Co., Gulfport, Miss.

T4 Thomas Steel Strip Co., Warren, O.
T5 Timken Company, Steel Division, Canton, O.
T7 Texas Steel Co., Fort Worth, Tex.
T9 Triumph Electro Corp., Chicago, Ill.
T10 Tennessee Forging Steel Corp., Harriman, Tenn.
T11 Teledyne Columbia-Summerill, Carnegie, Pa.

U1 United States Steel Corp., Pittsburgh, Pa.

W3 Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5 Wheeling-Pittsburgh Steel Corp.
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W10 Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14 Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		24.42	30.82	35.58	32.48	32.77	33.27	23.71	45.85	48.52	55.67	59.67	76.50
Baltimore		29.78	33.76	39.88	42.49	35.21	36.27	28.98	46.88	53.53	58.44	68.16	73.61
Birmingham		24.93	29.37	34.64	38.81	32.17	32.72	23.26	44.90	40.00	54.49	53.70	77.71
Boston		29.24	33.62	36.29	40.70	36.28	33.75	25.35	45.05	51.64	59.14	65.74	71.75
Buffalo		29.36	32.47	37.64	38.35	35.42	30.97	22.81	42.64	54.23	52.94	57.69	68.20
Chicago		25.11	29.61	32.60	33.23	28.53	28.87	19.23	39.85	45.58	50.97	57.01	63.00
Cincinnati		27.42	28.88	31.89	31.48	31.47	28.98	19.45	40.43	44.20	49.56	55.77	63.25
Cleveland		25.60	30.46	37.64	33.49	30.60	29.82	20.65	42.13	45.63	50.79	57.72	63.63
Denver		31.64	36.16	38.62	41.39	35.46	34.49	24.80	47.10	54.89	61.41	69.46	72.22
Detroit		25.01	29.21	31.92	31.67	29.19	28.48	18.32	40.28	44.06	49.43	55.01	61.99
Houston		29.51	34.38	38.02	44.69	33.32	36.13	28.46	48.29	55.94	62.48	69.48	76.62
Kansas City		27.40	31.47	34.25	32.63	30.99	28.97	24.37	42.69	49.43	55.28	61.98	68.39
Los Angeles		30.65	35.81	38.33	45.03	38.09	37.60	34.95	49.17	62.79	69.26	76.82	84.03
Memphis		26.92	31.40	34.63	36.61	33.66	31.03	24.90	44.04	51.28	56.68	64.65	80.43
Milwaukee		24.05	28.76	32.51	31.18	29.17	28.45	18.84	39.87	43.68	49.02	54.84	61.30
New York		25.48	30.08	34.34	44.36	30.29	28.69	24.29	47.76	53.51	58.90	68.33	74.35
Philadelphia		29.61	34.02	44.01	43.88	35.07	33.32	26.84	47.14	53.55	58.89	68.97	74.35
Pittsburgh		30.78	36.26	41.43	38.85	35.18	33.14	24.49	44.91	49.79	56.40	62.38	71.69
Portland		30.19	32.54	38.29	37.61	31.59	34.35	31.86	53.54	60.36	63.70	58.00	....
San Francisco		30.71	36.23	39.03	43.91	38.97	37.66	35.62	49.15	62.76	69.28	76.27	83.73
Seattle		29.72	27.21	37.91	39.29	32.06	33.99	36.84	50.23	62.61	68.14	72.05	84.11
Spokane		21.08	30.56	33.58	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis		26.43	31.08	33.07	34.20	30.26	29.26	20.55	40.42	43.69	49.53	55.93	62.28
St. Paul		25.26	27.70	24.00	31.64	30.57	28.03	18.75	40.67	43.63	49.89	56.46	62.58

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2¹⁵⁄₁₆; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

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MAY

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1981

STEEL SERVICE CENTERS: A SPECIAL ADVERTISING SECTION

Chilton's

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

MAY 13, 1981

5/20/81 C 2150-2

AUTO INDUSTRY RULES HEADED IN A NEW DIRECTION

CALIFORNIA OUT FRONT ON HIGH TECHNOLOGY

IRON AGE

VOL. 224, NO. 14

MAY 13, 1981

COVER STORY

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The new attitude in Washington will give automakers breathing room. Proposed regulatory changes and economic revitalization efforts may restore 200,000 jobs to the automotive and supplier industries.

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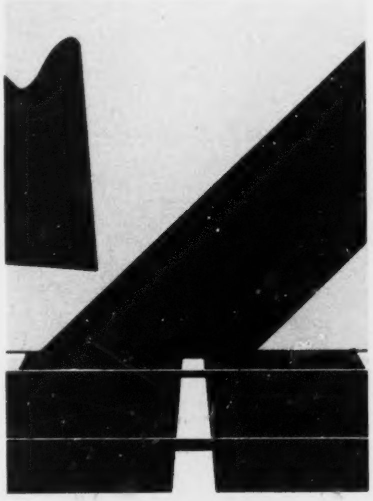

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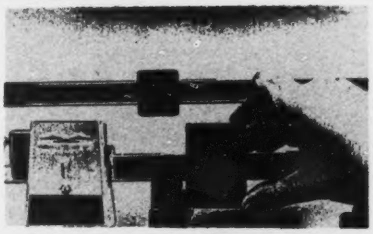
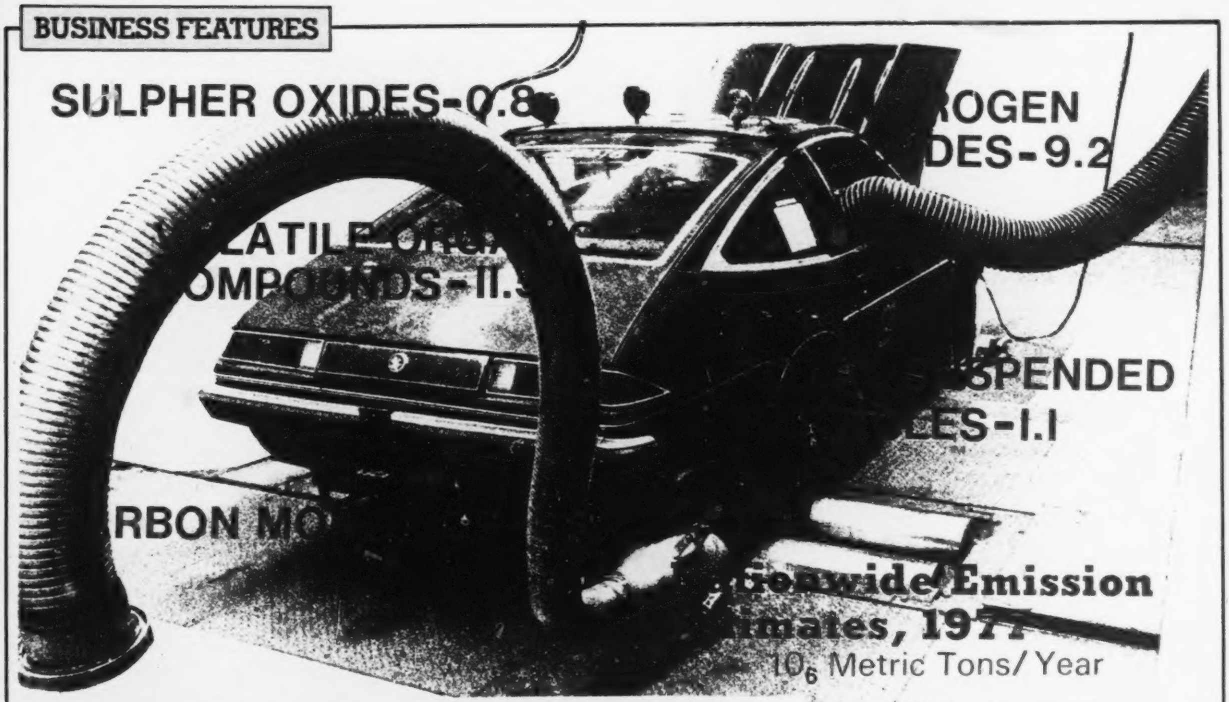


Annual steel outlook—
The road to profitability

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089



Source: Natl. Air Quality and Emissions Trends Report

GM measures exhaust pollutants of prototype vehicle. Back wheels are placed on dynamometer, and exhaust and engine are hooked up to test equipment. During test, the computerized test instruments (1) chart a prescribed EPA test of acceleration and deceleration that represents the typical daily driving schedule of a Los Angeles resident and that the test driver performs, (2) capture the exhaust fumes, and (3) measure the hydrocarbons, carbon monoxide, and oxides of nitrogen present in the exhaust.

AUTO RULES COULD MOVE DETROIT IN A NEW DIRECTION

New attitude in Washington will give automakers some breathing room.

By Bryan H. Berry

The Reagan administration's proposal to revise, rescind, or delay 35 regulations affecting the auto industry marks the initial step in what the metalworking industries hope will be a prolonged march toward freeing them of the expensive strictures of Federal regulations.

Announcing the government's proposals in early April, Vice President George Bush promised: "This is part of an ongoing effort, not the sum total of our regulatory relief program for the industry. We're not finished by a long shot."

Secretary of Transportation Drew Lewis predicted that the proposed regulatory changes, combined with the administration's economic revitalization program, which includes accelerated depreciation for capital expenditures and cuts in both income taxes and the federal budget, will restore 200,000 jobs to the automotive and supplier industries.

Vice President Bush and Murray Weidenbaum, the administration's chief economic adviser, also predicted that the changes will increase the sales of new cars in 1982 to 11 million. Such sales would restore the auto industry to the profitability it needs in order to finance the $70 or 80 billion retooling program it is undertaking from 1981 to 1985 to produce small, fuel-efficient cars competitive in quality to the Japanese imports that have captured almost a quarter of the American market.

Hershel Miller, vice-president of machine tool marketing for Ex-Cell-O Corp., which ranks fourth in shipments among American machine tool makers, recently said that inquiries and orders from automotive have dropped since the last quarter of last year. The Reagan regulatory changes, which the automakers have unanimously praised as a step in the right direction, will encourage Detroit to step up orders not only from machine tool companies but from other suppliers as well.

Regulations, of course, have cost America billions of dollars in the taxes required to payroll the regulators, in increased consumer prices, and in corporate expenditures. Some economists, including Mr. Weidenbaum, have figured that for every dollar spent on the regulatory agencies themselves, there are $20 in costs to American society. A direct result has been rising inflation fol-

Potential Savings from Proposed Federal Actions

Agency Action	Savings, Millions of Dollars		Comments
EPA	Initial	Five-Year	
Relax the statutory hydrocarbon and carbon monoxide standards for heavy trucks	108	536	Industry says this action will save $110 million in capital expenditures over next five years. GM estimates consumer savings of $900 per engine.
Relax the 10 percent Acceptable Quality Level to 40 percent for light and heavy trucks	19	129	International Harvester estimates this change will save it $14 million.
Delay assembly line testing for heavy trucks	57	64	Chrysler estimates a savings of $3 million from this change, GM $44 million, International Harvester $22 million.
Relax the NOx level for heavy trucks	150	563	No Comment
Adopt emissions averaging for diesel particulate emissions	40	523	No Comment
Eliminate 1984 high altitude auto emission standards	38	1,300	Requires amendment to Clean Air Act. Ford estimates this will save it about $56 million and save consumers $500 million.
Adopt self-certification for vehicles sold at high altitude	1	1	No Comment
Don't require technology to control emissions during refueling	103	1,200	Industry says this will save consumers $1.5 billion.
Reduce the annual number of assembly line test orders	1	1	No Comment
Explore deferring standards for paint shops	300	—	—
Savings from EPA actions	817	4,317	—
NHTSA			
Delay first year implementation of passive restraint standard	30	105	Additional savings of as much as $600 million investments and $1 billion annually in consumer costs are possible, depending on subsequent action by NHTSA.
Modify bumper standard	—	3,250	Some capital costs required to modify standard.
Rescind fields of direct view	174	85	Capital investment estimates are by GM and Ford.
All other NHTSA actions, including: Drop fuel economy standards after 1985; amend Uniform Tire Quality Grading System; and terminate rulemaking on Low Tire Pressure Warning Indicators	352	1,540	—
Savings from NHTSA actions	556	4,980	—
Total Savings (EPA and NHTSA)	1,373	9,297	About $150 per car and truck in potential consumer savings.

Editor's Note: Capital expenditures include the projected costs of the R&D, design, testing, tooling, facilities, and production that would have been needed to meet the present regulation. EPA and NHTSA calculated savings to the consumer by multiplying manufacturers' estimates of the cost per vehicle of the additional hardware that would have been needed to meet the present regulation times the number of vehicle sales they projected over the next five years. All figures in the Comments section cover a five-year period.

Source: Environmental Protection Agency and National Highway Traffic Safety Administration.

lowed closely by rising interest rates and falling consumer spending. In its 1981 Public Interest Report, General Motors estimated that it has spent more than $10 billion since 1974 to comply with federal, state, and local government requirements (see table).

"In 1980," the report states, "the Corporation spent $2.2 billion, and required the equivalent of over 25,000 full-time employes, to comply with regulations at all levels of government. These figures do not include the cost of hardware required in GM products to meet government standards, expenditures to improve fuel economy (which GM views as a function of the marketplace), nor taxes or compensation payments paid to workers suffering disabling injury on the job."

"Look at that building over there," said Chris M. Kennedy, Chrysler's Director of Federal Government Affairs, pointing to the Chrysler engineering building visible through his office window. "Twenty-five pct of the engineering workforce over there is working on future regulations. Those are just safety and emissions regulations, not fuel economy. That's not a productive use of our human and financial resources. We'd like to see those guys get back to work on future *products* instead.

"One thousand dollars of the retail price of our 1981 cars is due to safety and emissions regulations, roughly $600 for emissions and $400 for safety. Today's cars are 90 to 95 pct cleaner in emissions than the unregulated cars of the early '60s. We are absolutely convinced that pouring hundreds of dollars into that last batch of tailpipe emissions is bad corporate policy. There are better places than vehicles for EPA to concentrate on cleaning up the air. There's little reason to beat the last drop of emissions blood out of this poor automobile turnip. You can stop now. And the automotive component of air quality will get even better as old cars leave the fleet and new ones enter it."

It's impossible to isolate which percentage of the work force is working on regulations, said Roger E. Maugh, Ford's Director of Automotive Safety: "*Everybody* involved in manufacturing is involved with regulations. *All* our engineering staff has to work on regulations."

The new Federal administration didn't take Chris Kennedy's advice to completely eliminate future regulations on emissions, but it did take a small step in that direction. How much the proposals will help the auto industry is uncertain: For the most part, the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA) simply promised to study and consider changing regulations they had planned to enact during the next few years.

EPA issued "an interim-final rule" on only one of its eighteen proposed actions: It will allow automakers to self-certify the small (about 3 pct) percentage of vehicles they sell at high altitude, eliminating the expense of shipping them to high-altitude areas for emissions testing. EPA will propose final rules for most of the other proposals later this year, many in September. Automakers must submit prototypes of their 1983 model year vehicles to the government for testing by October, so they hope EPA will indeed issue final rules by then, or earlier.

"These proposals potentially could help us a lot," said Charles J. Elder, manager of fuel economy and certification in the automotive emission control section of General Motors' environmental activities staff. "They all go in the right direction, but what EPA is going to end up doing is the question."

Several proposals by EPA don't go far enough, say officials at the Big Three. The agency proposes relaxing the standards on hydrocarbon and carbon monoxide levels for gasoline-powered heavy trucks and the nitrogen oxide (NO_x) levels for diesel-powered ones, but "they haven't clearly justified that there's an air quality need for proposed standards," said Mr. Elder. "Heavy trucks account for only about 3 or 4 million of the 120 million vehicles on the road. You have to change the whole combustion process to reduce NO_x and we haven't learned how to do it to the levels EPA is talking about."

Reducing NO_x levels in diesel engines means increasing particulate emissions, and EPA wants automotive to pull off the difficult trick of reducing both to extremely low levels by the 1985 model year. The industry is working intensively on a trap to control diesel particulates. "Maybe we'll have the trap technology by 1985, but then it takes three years to get into production," said Mr. Elder.

Many in the industry would like to see the hydrocarbon and nitrogen oxides standards relaxed for all vehicles, but EPA has promised only to reconsider them in the future. "If Congress decides to do nothing else in the mobile emissions area," said GM Chairman Roger B. Smith in a recent address to the National Petroleum Refiners Association, "we believe it should at least revise the present carbon monoxide standard from 3.4 grams per mile to 7.0 grams and the current oxides of nitrogen standard from 1.0 grams per mile to 2.0 grams. There is growing scientific agreement that the CO tailpipe standard is already more stringent than necessary for realistic clean air requirements." "The National Academy of Sciences, the National Commission on Air Quality, and the California Air Resources Board all have no complaint with a carbon monoxide standard of 7.0 grams," said Helen O. Petrauskas, Ford's Director of Automotive Emissions and Fuel Economy. "The Clean Air Act was first enacted in 1967, and the Muskie amendments in 1970 included an arbitrary provision requiring a 90 pct reduction in car pollution. We didn't know much about ambient air quality controls then. Eleven years later we're in a vastly different position. We know what technology we have and what we can do without impairing the environment."

Other proposals by EPA:

- Delay for two years the assembly-line testing of heavy trucks. Mr. Elder questions whether such testing—officially known as the Selective Enforcement Auditing (SEA) program—of heavy trucks will ever be necessary: "The facilities just don't exist to do that. There isn't a good case established that says that the engines being built are exceeding the standards, so you don't need to spend money monitoring a nonproblem."
- Relax the 10 percent Acceptable Quality Level (AQL) to 40 pct for assembly-line testing of light trucks and heavy-duty engines.

The AQL is the percentage of vehicles permitted to fail the federal emissions test. In its discussion of this proposal, EPA stated: "Exhaust emission regulations that take effect in the 1984 model year specify that light trucks and heavy-duty engines must not exceed a failure rate of 10 pct during assembly-line testing. This is more stringent than the 40 pct failure rate that is allowed for passenger cars. Experience with the passenger car programs shows that manufacturers are actually producing vehicles with approximately a 20 pct failure rate. While it is unclear at this point to what degree this same benefit would occur for light trucks and heavy-duty engines, the Agency believes that it would be prudent to give the industry the opportunity to demonstrate its commitment to meet the emission standards before assessing whether a 10 pct AQL is indeed necessary."

The automakers wish all of the government's new proposals were based on the philosophy expressed in that last sentence. It summarizes what Detroit has been asking for more than a decade: Give us time to develop the technology to meet acceptable standards before piling on the expensive regulatory testing and paperwork. But many of the other government proposals simply call for delays in such rigorous and, in Detroit's view, unnecessary testing and represent an attenuation, not a repudiation, of the philosophy so candidly expressed in the past by EPA regulators: The automotive industry is recalcitrant, wrongheaded, and not interested in the public's need for safety and good air quality; therefore, the

How Much Government Regulations Cost General Motors

Millions of Dollars	Calendar Year 1974	1975	1976	1977	1978	1979	1980	Seven Year Total
Regulation of Vehicles								
Auto Safety	414	347	354	423	466	512	529	3,045
Auto Emission Control	454	185	188	247	446	601	719	2,840
Vehicle Noise Control	16	15	14	17	23	21	25	131
Total	884	547	556	667	935	1,134	1,273	6,016
Regulation of Plant Facilities Plant Pollution Control								
Air	77	57	58	83	146	211	299	931
Water	56	54	56	72	95	114	131	578
Solid Waste Control	48	38	57	79	75	88	75	460
Total	181	149	171	234	316	413	505	1,969

*Includes research and engineering, reliability, inspection, testing, facilities, tools, and rearrangement costs. Does not include the direct cost associated with the product (except direct inspection).

Equivalent Employes,† Efforts Required to Meet Government Regulations

	Calendar Year 1974	1975	1976	1977	1978	1979	1980
Regulation of Vehicles							
Auto Safety	12,300	10,400	10,500	11,800	11,100	11,800	10,600
Auto Emission Control	4,800	4,000	3,900	4,000	4,300	4,900	4,900
Vehicle Noise Control	400	300	300	300	400	300	300
Total	17,500	14,700	14,700	16,100	15,800	17,000	15,800
Regulation of Plant Facilities Plant Pollution Control							
Air	800	800	800	800	700	1,100	1,100
Water	500	500	500	600	800	900	800
Solid Waste Control	500	500	600	600	600	700	700
Total	1,800	1,800	1,900	2,000	2,100	2,700	2,600

†These estimates of employment, including technical, clerical, and other support personnel, were based on total hours worked as a result of regulations. Those hours were then converted to the equivalent number of employes working a calendar year.

regulators must "hold Detroit's feet to the fire" to get it to act in the public interest. "They want to take the approach of forcing technology developments," said Mr. Elder.

When industry is forced by government to market undeveloped technology, consumers suffer—and often rebel. "The emissions standards of the early '70s really were pressing technology," said Mr. Elder. "We had to put exhaust gas recirculation on before we really knew how to use it, so we ended up with very bad driveability. We had to run the engines very lean. We had very poor choke operation and poor cold-start driveaway. Cars trying to pull away from the stoplight stalled. It was just terrible: The cars really didn't drive well at all, and people didn't like them. So they started tampering with the system. *They* were going to fix them: They'd paid their money and wanted the darned thing to run. The garages got tremendous business, and we at GM and our dealers couldn't do anything to change the way the whole system was set up."

The catalytic converters required to clean up the engine's hydrocarbon emissions simply weren't ready when EPA began issuing strict emission standards in the early '70s. At that time General Motors had already spent ten years developing the technology, but the task was difficult and it told EPA it would need another five or six years of concentrated effort.

"The chemical and petroleum industries have used converters since the '30s, and we started off with catalysts very similar to what they use," said Mr. Elder.

By the mid '70s, after the American public had become accustomed to tampering with the engine, the converters were finally ready, as GM had predicted. Five years later, the company introduced the Computer Command Control System. "Now we think we've got some emissions systems where the cars do run pretty darn good, particularly the '81 models with the electronic control system. They run fantastic. But people still believe that 'I've got emission controls on there and I've got to try and make it run better and get better fuel economy' and it won't get better fuel economy that way," said Mr. Elder.

NHTSA's decision to delay mandatory automatic passive restraints for one year—its only action to be effective immediately—will spare full-size-car buyers another technology marketed prematurely. "Those 1982 automatic seatbelts would have made automatic seatbelts unpopular," said Roger E. Maugh, Ford's Director of Automotive Safety. "We weren't happy with them. They are very coercive; they rub across the torso, and the buckles catch on clothing."

NHTSA has finally agreed with the auto industry that the present bumper standard, which requires no dents on the front and rear bumpers in 5-mph collision tests, is not cost-effective. The agency has proposed eliminating the test for the rear bumper, which is involved in fewer accidents than the front, and either eliminating the front bumper standard or dropping the collision test to 2½ mph. "For the first time the government is recognizing the economics of the bumper," said Mr. Maugh. "The special bumper systems required by the present standard aren't cost-effective and add weight. Now we can redesign them and cut out something like 20 to 40 lbs." □

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BUSINESS FINANCEFRONT

Merger activity surges in first quarter

Merger activity took off with a bang in the first quarter this year after a very lackluster 1980.

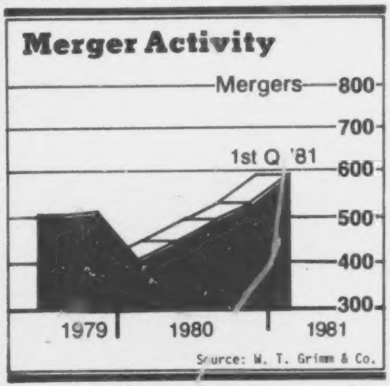
Announcements of mergers and acquisitions in this year's first three months totaled 599, reports W. T. Grimm & Co., Chicago-based merger specialist and intermediary.

That was the highest quarterly count since the third quarter of 1977, when 616 acquisitions were recorded. Last year's first quarter—with a merger count of 411—was the lowest quarterly tabulation in over ten years. This year's initial three months soared 46 pct over '80's meager 411.

What went wrong in 1980? What went right in the first three months of '81?

Commenting on '80, Willard T. Grimm, the company's chairman noted, "The unstable economic conditions of last year, along with the erratic prime interest rate, disrupted the fairly steady merger pace that existed prior to 1980."

On the resurgency early this year he noted, "In response to double-digit inflation and lofty interest rates, corporate purchasers have more or less adjusted their acquisition programs by establishing more selective criteria. Acquisition candidates must offer appealing growth in earnings, a higher return on assets or exceptional financial strength to justify higher money costs."



Merger Activity

Source: W. T. Grimm & Co.

(Mr. Grimm didn't say so but perhaps the change in Administrations in Washington this past January had something to do with the upsurge. Inflation and high interest rates were present in 1980, but merger moves in big volume were not a response to them.)

Big billion dollar deals or attempts at them are the vogue in mergers these days and the minerals and mining industries are big factors in this trend. In first quarter '80, says Grimm, the total dollar volume paid for all transactions (where a purchase price was given) swelled to $17.5 billion. This was the largest quarterly aggregate ever recorded.

Mining and minerals deals contributed $8.5 billion to that total and three of the five largest deals completed or pending at the end of March were in that area of industry. However, since then, one of the three—the proposed acquisition of AMAX by Standard Oil (California)—now appears unlikely. The other two—still pending at this writing—are purchase of Kennecott by Standard Oil (Ohio) and Fluor Corp.'s offer for St. Joe Minerals.

In the first quarter there were a total of 25 transactions completed or proposed—each involving a purchase price of $100 million or more.

Divestitures and acquisitions of privately held companies dominate the merger scene in type of activity. In the opening three months of '81 there were 216 divestitures and 319 acquisitions of privately held companies.

Says Tomislava Simic, Grimm's director of research, "Since most companies expect inflation and high interest rates to continue, they are divesting units to achieve long-term goals or to satisfy short-term demands.

"While the diversified companies are implementing strategic divestments," she continues, "smaller firms are selling assets to repay debts or increase working capital. At the same time, privately held concerns, of which the majority are small companies, are merging with larger companies in order to obtain financial and marketing resources."

Foreign buyers continued their drive to acquire American companies with a surge in the first quarter, Grimm notes. They purchased 57 U.S. companies, compared with only 38 in the first quarter of '80.

How's the economy in major nations?

Economic conditions in seven major industrial countries are continually monitored by The Conference Board.

In its latest analysis, the Board offers these capsule current readings for the seven, together with the table shown here:

United States—"recovery slowing"; Canada—"advancing smartly again"; Japan—"decline continuing"; United Kingdom—"downturn leveling off"; West Germany—"decline may have halted"; France—"expansion continuing"; and Italy—"expansion accelerating."

"On balance," says the Board, "the industrial world is just about in neutral, as a result of an unusual diversity of cyclical movements among the individual countries."

International Economic Scoreboard

	10-Year Growth Rates	Recent changes (annual rates, pct)	
		3 Mos. Ago	Latest
U.S.	3	4	2
Canada	5	3	5
Japan	8	−7	−11
United Kingdom	2	−6	−1
West Germany	4	−3	−2
France	5	2	4
Italy	4	8	12

Source: Cont. Board

The international indexes are compiled for the Board by Dr. Geoffrey H. Moore, director of the Center for International Business Cycle Research at Rutgers University.

The latest readings indicate that the pronounced recession in the United Kingdom is showing early signs of ending, the Board states. That country's leading economic index moved up to 123 in January (the most recent reading available at the end of April), scoring a two-point gain over the previous reading. That marked the first advance in the U.K's index in 15 months.

Adds the Board, "The economic turnaround in the United Kingdom remains tentative, however. Economic improvement in that country has not yet carried far enough to trigger even the first of three major signals used by the Scoreboard to confirm a full-fledged recovery."

It's added that the continuing improvement in Great Britain's export surplus, which climbed to an annual rate of $20 billion in the final quarter of '80, is a positive but often overlooked factor in its performance.

That export surplus, it's pointed out, was caused primarily by the rising price of oil and the increased production from fields in the North Sea.

While economic growth in Great Britain has been slowly improving, the leading economic index in the U.S. stalled early in '81, says the Conference Board. It fell from 143 in December to 140 in February.

SOFTWARE KEEPS TRACK OF WORKERS EXPOSED TO TOXIC MATERIALS

Programs recording exposure data, health records and chemical locations are a boon with industry facing increased liability.

By Karen R. Moldt

Can you pinpoint the employees in your workforce who are most susceptible to health and safety hazards in your industry?

If you answer "yes" is your answer based on knowledge of each worker's fitness for his or her job function? For example, if one of your welders has an asthmatic condition, it could make him more susceptible than his co-workers to environmental conditions. Will he sue someday for a job-related illness?

If your recordkeeping system isn't this specific, it might be wise to review your potential for liability. Group lawsuits alleging occupation-related illnesses are increasing and cost millions of dollars a year. In 1979 alone, the U.S. Department of Labor recently reported that almost 5,000 workers lost their lives in on-the-job accidents or illnesses. Another 6.1 million experienced work-related injuries or ailments that year.

Employee litigation demands will be joined by several Occupational Safety and Health Administration (OSHA) regulations governing employee access to medical exposure records. Workers will now be able to review their job-related medical records including details of their exposure to dangerous substances. This should make it easier for employees and their unions to determine if illnesses have resulted from job exposures.

It's estimated that 20 million to 25 million workers are directly exposed to chemicals and other hazardous substances that are government regulated.

Early in 1980, OSHA published a general rule that may soon require employers to keep records of employee exposure to hazardous substances found in the workplace. The Environmental Protection Agency has also proposed several regulations under the Toxic Substances Control Act which would require companies to accumulate production, exposure and health data.

There are some materials which aren't presently regulated because it takes up to 20 years or longer for adverse effects to show up. But there's a growing trend to collect data on such materials—including fly ash, coal dust and other organic substances—in anticipation of future regulation and potential hazards. Employers are beginning to plan for the long-term rather than merely reacting in the short run.

Even if your desk were suddenly swept clear of all those agency reports to be answered, you'd still be accountable to a very demanding constituency—your employees.

Scott Shanks, an executive with The Research Corporation (TRC) of New England, observes that even if the Administration relaxed its demands, employees would be ready and willing to assume Washington's role. In fact, Mr. Shanks believes employee pressure will be even more intense because "they are so aware of toxic situations and their legal rights to seek damages."

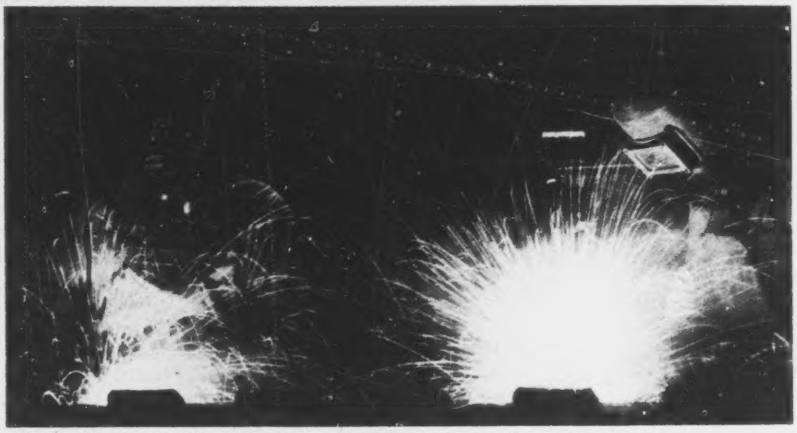
Several firms are offering services targeted to help companies beef up their recordkeeping on employee health and safety issues. TRC of Wethersfield, Conn., offers the Exposure Record System (ERS) which records worker exposure data, health records and chemical locations.

Control Data Corp., Minneapolis, features a program called Compliance Assistance Services. It includes consultation, a computer-based Occupa-

Mining Industry's Tally Cards for Job Injuries and Illnesses

Incidence Rates Per 100 Full Time Workers

	1979 Annual Average Employment (in thousands)	Total Cases		Lost Workday Cases		Nonfatal Cases without Lost Workdays		Lost Workdays	
		1978	1979	1978	1979	1978	1979	1978	1979
Mining	960.0	11.3		6.4	6.7	4.9	4.5	142.3	149.8
Metal Mining	100.8	9.9		5.4	5.9	4.5	4.1	113.1	117.2
Anthracite Mining	3.1	19.3		11.3	10.9	7.9	7.4	306.7	266.6
Bituminous Coal and Lignite Mining	259.9	9.8		7.3	8.2	2.5	1.9	169.6	205.4
Oil and Gas Exploration	472.9	13.7		6.9	6.9	6.8	6.5	153.4	150.6
Nonmetallic Minerals, Except Fuels	122.8	6.8		4.1	4.1	2.6	2.1	87.4	80.8



Monitoring the health of welders can be done with the Control Data system.

tional Health Management System (OHMS), health professional services and corrective action programs to assist in safety and health education.

The ERS program consists of three modules covering worker exposure, health records and chemical location. The worker exposure unit records the number of hours a worker is exposed to certain chemicals and hazards resulting from particular production processes. This module shows the cumulative exposure to a specific chemical for all workers within a given plant.

It can also list which workers are exposed to various chemicals during a specified time period. The format can also list the workers who may have exceeded or who are about to exceed a determined exposure level to one or more chemicals.

ERS Health Records Module records specific employee health data regarding accidents, special medical tests, illnesses, safety training and chemical sensitivities. This section can alert managers when employees should be screened for sensitivity to a particular chemical. It records when the screenings took place and the testing results.

ERS also describes the existence and usage of various chemicals on a plant and process basis through use of the chemical location module. This module gives a process description through identification of input materials, catalysts, intermediate products, pollutants, end products and any other material of interest.

ERS is a flexible system—it's programmed in COBOL and is designed to run on most general purpose computers.

The Compliance Assistance program offered by Control Data begins with identifying the reports required by the client company. An industrial hygiene survey is provided whereby a hygienist and an occupational physician walk through a plant with the firm's health manager to determine potential and actual hazards.

As a second step, the OHMS plan gathers and organizes medical and exposure information about each employee and his work environment. This feature recommends corrective actions, lists the reports involved and stores the records to comply with regulations.

OHMS correlates an employee's initial health history with the chemical listings provided by the firm and the applicable regulatory information on toxic substances. Based on this data, the program determines additional health history questions to ask specific workers. OHMS lists employees who need lab tests and describes the medical emphasis for a physical examination. It also recommends special studies that should be performed.

The third step provides for monitoring and testing the selected employees. These tests can be performed on a pre-placement or periodic basis. They can review fitness for a job function, provide a disability evaluation or recommend further laboratory tests.

Fourthly, the company's medical department receives a summary of the employee's history, lab tests, physical measurements and physician's examination findings. A final report correlates all significant findings including exposures by level of exposure, exposure by potential effect, general health findings. This report lists recommendations for further testing and recall or referral action.

Control Data's program can also help identify high risk occupational groups by determining the job functions and individuals that are most susceptible to particular job hazards. If a company wants to more closely monitor the health of its welders, this program can provide anonymous group reports on welders. This method can help determine whether a particular disease is common to a specific job function.

For employers concerned with identifying chemicals and hazards that may pose a future health threat, OHMS can be tailored to start monitoring those materials now.

The data recorded by these recordkeeping systems is obtained from monitoring equipment that does an adequate job of screening various materials *if* it is properly calibrated and maintained. This is the observation of Jack Garrett, industrial hygiene director, department of medicine and environment health, Monsanto Co., St. Louis. Monsanto manufactures chemicals, agricultural products, plastics and resins and textiles.

He believes the state of the art will improve considerably over the next few years enabling more hazardous materials to be monitored. However, he warns that this equipment "is not the panacea that some envision" without understanding that it must be properly maintained.

It's to industry's advantage to take every precaution regarding employee health and safety because trained people can't be replaced. "To protect health and longevity and to make a profit are not mutually exclusive goals," says the industrial hygiene director.

"We lose more employees on auto accidents over vacation than we do during operations," Mr. Garrett observes. He explains that there is no choice regarding employee safety in the chemical industry because of the dangerous operations involved. "Because it's inherently dangerous, it's inherently safe," he notes.

The industry's refining processes often require a worker to check on various pumps and valves in isolated, unattended areas. "It's wise to know whether he's walking into a trap. It's wise to know if there's a substance there that's highly toxic or explosive," he adds.

Mr. Garrett maintains that American industry has a better health record than any other country. Still, with 5,000 employees killed in 1979 as a result of occupational injuries or illnesses, it would behoove industry to persevere in monitoring employee health and safety. ☐

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IS THERE TROUBLE BREWING IN CALIFORNIA'S SILICON VALLEY?

The threat to California's lock on the electronics industry is real, with facilities springing up in Texas, Ohio, North Carolina and New England.

By Charles T. Post

California's Governor Edmund G. Brown Jr. is very much aware that political mice from all over the world are nibbling away at the rich industrial plum known as Silicon Valley. He intends to do something about it.

Less than a generation ago, the Valley, about 40 miles south of San Francisco, produced half the world's prunes and apricots. Now the Valley is jam-packed with think tanks and campus-type factories. Together with other California facilities, Silicon Valley firms produce more than one-third of the world's integrated circuits, more than the rest of the United States and as much as foreign countries combined. Including other electronic and high technology equipment, California firms produce 30 pct of the national total, more than any other state.

Probably no other industry is so concentrated geographically, and so important to the business vitality of a state. Electronics employs over 400,000 Californians, almost 23 pct of the State's manufacturing employment. Their paychecks total over $6 billion annually.

Over one-third of the total expansion of California's manufacturing employment during the last 17 years has come from electronics. The industry generates roughly 100,000 new jobs a year for Californians.

The state might as well be walking around with its wallet sticking out from its back pocket. Other states and nations have their eyes on this lucrative business.

Recently, computer and electronics plants have been springing up in places like Phoenix, Portland, and Colorado Springs with some regularity. To make matters worse, Texas, Ohio, North Carolina, New England, and Minnesota have been picking some plums. And, ominously, Japan's share of the world market has been increasing. America's share of the total world electronics market has slipped from 60 to 70 pct, 10 yrs ago, to 40 pct today.

California has not been ranked among the states friendly to business—until recently. Taxes, environmental regulations, and the political ambience have been on the minus side in most business ratings. Political appointments have tended to exacerbate the business community.

Now, Governor Brown proposes to doff his black hat and join hands with business in a common defense of the state's technology-based industries. Much of the ammunition will be supplied by beefing up the already substantial research facilities of the University of California at Berkeley.

The Governor points out that the present technology industries of the state substantially are based on public investments in basic and applied research made over the past two decades. He plans to carry on this tradition, adding product development to the plan.

A three-pronged attack is proposed:

1) To seal the partnership of the university and business in basic research, microelectronics laboratories at the Berkeley campus would be expanded at a cost of $2.6 million. The electronics industry would match, dollar for dollar, a $5 million program of state grants for basic research and graduate education in microelectronics technology.

2) In applied research, state fund-

ing of grants totalling $4 million annually would allow an estimated 100 firms to conduct product feasibility studies. Individual grants would be limited to $50,000.

3) To stimulate product development, the governor proposes the formation of a non-profit corporation to provide technical assistance and capital to investors and entrepreneurs in the microelectronics and computer fields. Financing would come from a $2 million federal grant and $3 million in state matching funds.

The other facet of Governor Brown's program is practical help in capital formation, particularly for new small firms. These would not necessarily be in the microelectronics or computer fields.

To raise the money, a task force is proposed to recast pension fund investment policy and to explore new vehicles "for the prudent investment of public and private pension fund assets in business expansion and housing."

A constitutional amendment would increase from 25 pct to 40 pct the allowable share of public and private pension funds which could be invested in eligible common stock. Restrictions on eligibility would be relaxed through legislation. As much as 2 pct of public pension fund assets could be placed in venture capital limited partnerships.

Transfusions from pension funds could be a major stimulant to California small businesses. State and local government pension funds amount to nearly $30 billion, the governor estimates. Private pension plans contain another estimated $30 billion. Total pension fund assets are expected to reach $3 trillion by 1995.

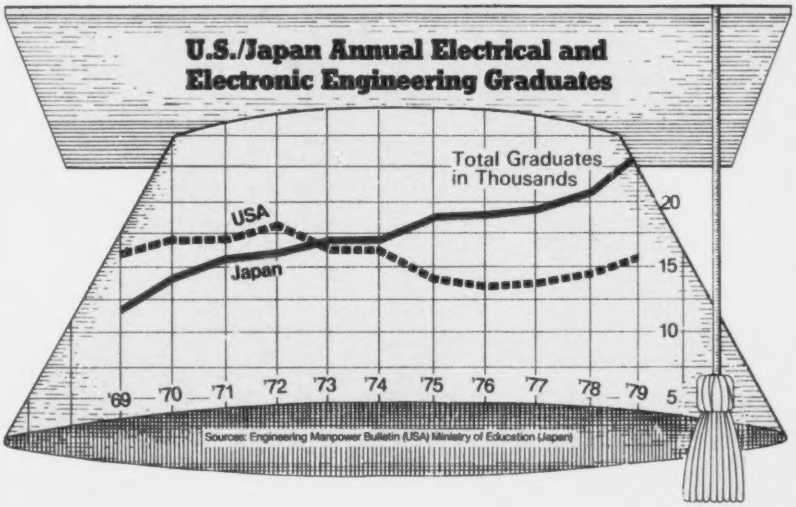
To give small and medium-sized firms a better shot at long-term capital—now almost impossible to secure—the governor proposes a $5 million insurance fund. This would provide partial insurance for pools of long-term loans assembled by private lenders and sold at market rates to public and private funds.

To further increase risk capital available to small business, the governor wants to reduce state taxes on capital gains arising from long-term investment in small business.

The strategy employed by states to encourage industrial development recently has changed noticeably, according to Michael Barker, associate director of the Council of State Planning Agencies, Washington, D.C.

"The states were simply stealing plants from each other, with little real improvement in total activity. Great stress was placed on branch plant location, even though only about 500 branch site selections were made annually. The choice most frequently was made on the basis of marketing considerations."

"Recently emphasis has shifted to the development of new and small firms," Mr. Barker continues. "An M.I.T. study shows that the percentage of jobs created by young, small companies is greater proportionately than those created by large enterprises."



Sources: Engineering Manpower Bulletin (USA) Ministry of Education (Japan)

California's research grant program proposal notes that "individuals and small technical firms have contributed a far greater share of innovations than larger firms."

"A number of recent studies have shown that most of the employment growth in recent years has come from small firms. Yet, almost all private and public research funds are concentrated in a small number of universities and very large firms."

This line of thinking coincides with the theory that large firms are less likely than small ones to be susceptible to such incentives as public financing and tax inducements.

"The biggies don't need the money as badly and are more strongly influenced by other factors," the theory runs.

"Business goes where money is, in the right forms, and on the right terms," believes Mr. Barker.

The trend is away from debt financing programs and towards equity programs in state assistance, he notes.

"Public officials are not equipped to be venture capitalists, but the public body can subsidize those who provide capital," Mr. Barker suggests.

Ever since the post-World War II era brought dazzling growth to the Route 128 loop around Boston, those who stalk business—particularly the electronics business—have explored ways of luring their prey.

The Route 128 complex, of course, grew from the grass roots along with the self-generated electronics business. Credit for this new industry locating in this particular locality generally is attributed to its proximity to a distinguished group of educational institutions led by M.I.T. and Harvard. The electronic pioneers formed a circle for their mutual enlightenment and to ponder ways of miniaturizing Dr. Norbert Wiener's big computer. Not until 1975 did the State of Massachusetts come forward with a formal development program.

The state government enlisted the help of industry to counter the drift of new plants to other locations. One result was a "social contract"—an informal agreement between Governor Edward J. King and the High Technology Council. Tax abatement was tied to job creation. If the state would reform the business tax structure, industry would pledge itself to create new jobs. So far, three tax liberalization measures have been passed, including graduated reductions in the capital gains tax.

Business also recommended the creation of financing mechanisms, including development banks to help infant companies. Venture capitalists, it was noted, were relatively inflexible in their terms. Most demanded equity in the entrepreneur's firm, rapid high-multiple growth, a relatively short payout, and possible sale of the firm to retrieve capital gains. Through the Massachusetts Technology Development Corp., the state devised "royalty financing", with grants to be paid back based on percentage of sales. This arrangement provides "patient money" for longer pay-out and assurance that the capitalist will not insist on selling the firm. The investor is allowed a high rate of return on his investment but in a form other than capital gains.

The close relationship between educational institutions and electronics-related industries continues. Silicon Valley recruiting come-ons inevitably mention geographical proximity to Stanford and the University of California at Berkeley. And those would establish their own Silicon Valleys frequently center their activities around universities.

The Microelectronic & Information Sciences Center (MEIS), now in its formative stages in the Minneapolis area, is a child of the University of Minnesota. The University has five industrial partners: Control Data Corp., Honeywell, Medtronic, Sperry Univac and 3M.

MEIS cites two broad purposes: "First, to sponsor and conduct research on 'cutting edge' problems in the microelectronics and information sciences, and, second, to strengthen the educational offerings of the University of Minnesota and other MEIS-affiliated universities."

The Center hopes to affiliate with other universities in Minnesota and elsewhere. It also hopes to attract other industrial sponsors. This should be no great problem, for electronics produces about 40 pct of the state's manufacturing output. There are about 1000 high technology companies in metropolitan Minneapolis-St. Paul alone.

"We do not rule out direct state Participation," says William R. Franta, co-director of MEIS. "We also hope to get federal support."

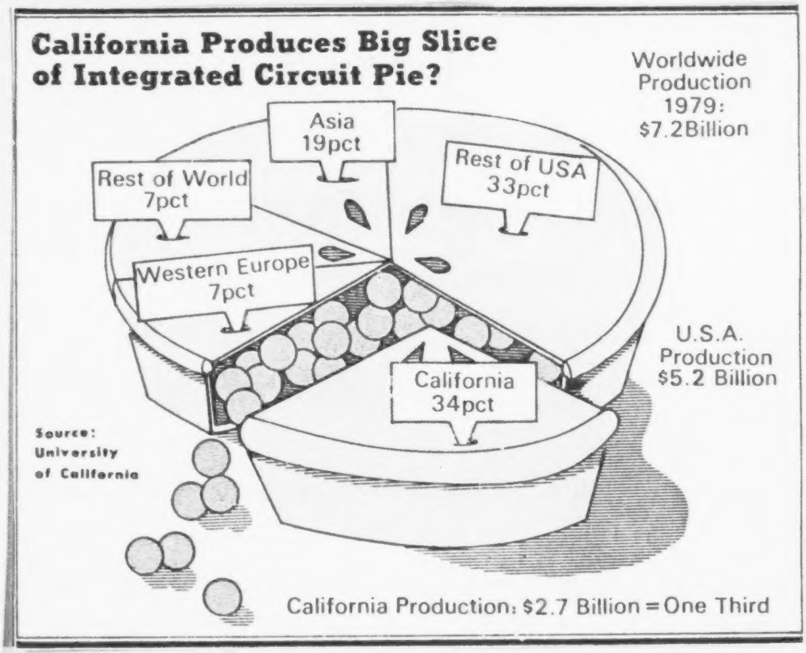
Currently, sharply increased funding is being sought through the university. No research projects have been financed yet.

MEIS defines its field as microelectronics, composed of physical sciences and design; and, information sciences, composed of system architecture, software engineering, and applications. Projects will span both pure and applied research.

Long term, the Center hopes to develop royalty generating patents and to license software. Since MEIS operates within the University structure, royalties would belong to the University.

Another measure of success will be the level of corporate transfer and development of MEIS Center-generated ideas, prototypes, software and suggested business opportunities.

California Produces Big Slice of Integrated Circuit Pie?



Source: University of California

Down the road, Mr. Franta contemplates a possible national organization of research centers in order to avoid duplication of effort. To some extent, there is an interchange already with Stanford and the University of California.

In contrast to Minnesota, which emphasizes research and development in its business recruiting pitch, New York state leans heavily on new and attractive fiscal and tax policies.

New York is setting out to grow its own companies, according to Roger J. Vaughan, deputy director, Office of Development Planning. New companies are more heavily influenced by tax incentives than old companies, he observes.

New York believes "the key to sustained economic growth is the continued development of new business enterprise (which) includes the small young firms that pioneer in the areas of high technology and established corporate giants that invest hundreds of millions of dollars in the development of new products."

A proposed tax reform package includes several incentives for new business. One is exemption from the state capital gains tax for investments made during the first five years of a firm's existence in New York provided they are held for at least five years. It extends the investment tax credit and accelerated depreciation to investments in R&D. Both the state's investment tax credit and employment incentive credit are refundable to new firms. And, in general, the tax structure is brought into line with more favorable federal rules.

Governor Hugh L. Carey is proposing several initiatives in business development financing.

Like California's "Jerry" Brown, New York's Gov. Carey casts his eyes on public employee pension funds as a source of capital for developing business. In addition to less restrictive regulations for financing business, the funds would be allowed to invest in venture capital firms.

Investment income earned by banks on high risk investments in new and small businesses would be exempted from criminal usury laws, which have a 25 pct interest ceiling.

"Such risks entail higher returns from successful ventures to compensate for losses on unsuccessful ones," the proposal notes. "At present, the criminal usury law discourages banks from developing innovative new financing techniques, such as risk pooling and royalty repayment loans."

A $1 million dollar fund, to be matched by a U.S. Department grant, would be provided for financing innovative new products and new enterprises during the product development stage before traditional sources of funds are available.

The borrowing capacity of the state's Job Development Authority would be increased from $150 million to $300 million. The Authority makes loans to firms denied capital from traditional sources.

A special program would be installed to help small firms develop natural resources.

While California and New York lay considerable emphasis on the breeding and feeding of new firms, the most ambitious program for luring microelectronics firms, big or small, has been mounted by North Carolina.

Not only has the state succeeded in attracting a $51 million General Electric semiconductor plant, but two Silicon Valley corporate pillars, Hewlett-Packard and Varian Associates, have acquired sites.

In some respects, the attraction of North Carolina is similar to that offered by California three decades ago—sun belt ambience, low taxes, reasonable property and building costs, plentiful trained or trainable labor, and big-league research facilities.

North Carolina's showpiece is the so-called Research Triangle whose points are formed by Duke University, Durham; University of North Carolina, Chapel Hill; and North Carolina State University, Raleigh.

In 1958, the state turned over 5700 acres of undeveloped pine woods within the Triangle to a non-profit foundation. The foundation is closely affiliated with the Universities, but includes a large complement of business executives on its board.

The foundation created Research Triangle Park, to which it has attracted over 30 government and private research facilities. They employ over 20,000 people, heavily sprinkled with PhD's. Only incidental light manufacturing is permitted within the park, but plants have sprung up along the periphery.

Crown jewel of the park is the Research Triangle Institute, which performs non-profit contract research to the tune of more than $50 million per year and employes over 1100.

Clients include the Federal and state governments, corporations, industrial associations, and public service agencies.

The bulk of its activities are in the social and environmental sciences, however, and over two-thirds of its contracts have been with the Federal government.

With this background of rapid success it is no surprise that North Carolina should take dead aim at the microelectronics industries using a similar formula. The non-profit Microelectronics Center of North Carolina was born last summer. By autumn, Governor James B. Hunt, Jr., was beating the drums in Silicon Valley.

The planned facilities are "those required for the design, fabrication and testing of complete microelectronics systems, and for semi-conductor research and instruction aimed at future technology." These facilities will be available to six major North Carolina universities with engineering departments, to the Research Triangle Institute, and to two community colleges.

One fillip to attract new industries to the state is a complete training program to provide workers with the necessary skills.

In essence, industry is assured that when it breaks ground for a new plant, training of the initial cadre of workers will begin.

When full operating levels are reached, trained workers will be available. ☐

Can California's Crowded Cradle of Microelectronics Be Saved?

It is hard to convince a top manager who has raised his company from a grubstake to sales volume in the hundreds of millions, in a decade or so, that very much about the Valley needs saving. Although the Japanese have been making some market inroads, most state-of-the-art technology is comfortably ahead of competition.

The one aspect that seems to bother almost everyone is lack of electronics engineers, both in the absolute numbers needed to push the industry along, and in the relative numbers needed to match foreign engineering graduates.

Consequently, it is not surprising to find almost universal support in the Valley for the section of Gov. "Jerry" Brown's program calling for $2.6 million in research facilities and $10 million for basic research and graduate education at the University of California at Berkeley. The portion of the program which calls for applied research grants for small business, and that which would make the state sort of a venture-capitalist-of-last-resort is politically tainted, some feel.

Daniel D. Shearer, senior consultant to SRI International (formerly Stanford Research Institute), is involved in the Valley, both in its businesses and geographically.

"The Valley is not dead," he says. "Most microelectronics development is taking place here. It represents a tremendous concentration of knowledgeable brain power. It is still the birthplace of most new ideas and new businesses in the microelectronics field."

"Universities will have a profound effect on product development over the next five years. For the first time they are teaching integrated circuit design, particularly in the California universities. The industry currently employs a total of 1500 to 2000 designers, but the universities now are graduating 1000 a year. They will speed VLSI circuit development considerably."

Mr. Shearer sees no shortage of venture capital to supply worthy new projects. Government money might flow into "wilder" ventures with less chance of success, he believes.

Hewlett-Packard Co. is an old settler in the Valley and one of the industry leaders. For over 20 years, it has pursued a policy of geographical diversification, not only in manufacturing, but in marketing and R & D. Although Hewlett-Packard's corporate staff is firmly entrenched in Palo Alto, the company feels the Valley cannot support new additional operations. At the top of the list of reasons, H-P places lack of reliable energy supplies. (The company is a staunch supporter of nuclear energy.) Next comes highway transportation, and, third, housing. If the highway arteries could be unjammed, employees could travel longer distances to solve the acute housing shortage in the Valley, the reasoning runs.

Hewlett-Packard has put its prestige and influence squarely behind the enhanced University of California research and educational programs. President John A. Young is less enthusiastic about applied research grants to small businesses and about putting the state in the venture capital business.

"The decision-making structure would focus the grants on socially desirable projects with slim marketing prospects," he writes. If these grants were to be administered by the university and research carried out on-campus, his views might change, he says.

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EFFECTIVE APR. 27, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	300	307	305	285
Buffalo	68	72	72	64
Pittsburgh	485	463	461	443
Youngstown	139	153	139	137
Cleveland	174	182	181	159
Detroit	181	183	183	193
Chicago	615	592	654	566
Cincinnati	104	109	114	125
St. Louis	102	102	100	79
Southern	272	261	269	266
Western	160	157	142	156
U.S. Production	2,600	2,581	2,620	2,473

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective April 27, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,600	2,581	41,630	40,564
Capability Utilization Rate	86.9	86.3	84.6	83.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$99.83	$100.50	$107.17	$93.83
No. 2 bundles	$ 73.83	$ 75.50	$ 75.17	$ 60.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$108.50	$108.50	$117.50	$99.50
No. 1 steel, Philadelphia	88.50	88.50	91.50	91.50
No. 1 steel, Chicago	102.50	104.50	112.50	90.50
No. 1 bundles, Detroit	108.50	108.50	106.50	95.50
Low Phos., Youngstown	109.50	109.50	113.50	108.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	96.50
No. 1 mach'y cast., Phila	121.50	121.50	121.50	127.50
No. 1 mach'y cast., Chi	127.50	127.50	129.50	137.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective April 27, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	84.40-88.00	85.00-88.00	4/27/81
Lead	38.00	36.00	4/ 8/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	43.50-43.75	41.50-43.75	3/27/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: Prime Western.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$483.00
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$11.16
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

April 20—583.83
April 21—586.73
April 22—587.45
April 23—591.32
April 24—588.16

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68¾	63⅝
Red brass	74⅛	67⅝
Comm. bronze	76	68⅞
Mang. bronze	67½	65¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	79
No. 2 copper wire	69
Light copper	60

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	65
Light copper	56
No. 1 composition	72
No. 1 comp. turnings	70
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	33
Radiators	54

Aluminum

New mixed clips	41	—42
Old sheet	36	—37
Old cast	36	—37
Clean dry borings	37	—38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	42	—43
Mixed L.C. clips	34	—35
Old sheets and cast	27	—28
Boring and turnings	24	—25
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE APRIL 27, 1981

MATERIALS NEWSFRONT

(Effective April 27, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$108.00 to	$109.00
No. 2 hvy. melting	98.00 to	99.00
No. 1 dealer bundles	122.00 to	123.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 bundles	81.00 to	82.00
No. 1 busheling	122.00 to	123.00
Machine shop turn.	29.00 to	30.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	54.00
Low phos. punchings plate	129.00 to	130.00
Heavy turnings	98.00 to	99.00
No. 1 RR hvy. melting	117.00 to	118.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	108.00 to	109.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	720.00 to	730.00
18-8 turnings	615.00 to	620.00

Chicago

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 dealer bundles	79.00 to	80.00
Unburned bundles	64.00 to	65.00
No. 1 busheling	106.00 to	107.00
Shredder scrap	105.00 to	106.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	53.00 to	54.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	74.00 to	75.00
Low phos. forge crop	125.00 to	126.00
Low. phos. punchings plate ¼ in. and heavier	133.00 to	134.00
Low phos. 2 ft. and under	127.00 to	128.00
No.1 RR hvy. melting	105.00 to	106.00
Scrap rails, random lgth.	103.00 to	104.00
Reroller rails	129.00 to	130.00
Rails, 2 ft. and under	131.00 to	132.00
RR couplers and knuckles	126.00 to	127.00
RR car axles	174.00 to	175.00
No. 1 machinery cast	127.00 to	128.00
Cupola cast	119.00 to	120.00
Stove plate	114.00 to	115.00
Steel car wheels	126.00 to	127.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 87.00 to	$ 90.00
No. 2 hvy. melting	76.00 to	79.00
No. 1 dealer bundles	110.00 to	113.00
No. 2 dealer bundles	59.00 to	62.00
No. 1 busheling	107.00 to	110.00
Shredder scrap	98.00 to	101.00
Machine shop turn.	38.00 to	41.00
Mixed bor. and turn.	38.00 to	41.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	105.00 to	108.00
Low phos. 2 ft. punchings	124.00 to	127.00
Electric furnace bundles	125.00 to	128.00
RR specialties	106.00 to	109.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	87.00 to	90.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	120.00 to	123.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	108.00 to	109.00
No. 2 bundles	53.00 to	54.00
No. 1 busheling	105.00 to	106.00
Drop forge flashings	83.00 to	84.00
Machine shop turn.	46.00 to	47.00
Mixed borings and turn.	43.00 to	44.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	115.00 to	116.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$100.00 to	$101.00
No. 2 hvy. melting	70.00 to	71.00
No. 1 dealer bundles	101.00 to	102.00
No. 2 dealer bundles	70.00 to	71.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	109.00 to	110.00
Electric furnace bundles	109.00 to	110.00
Galvanized bundles	96.00 to	97.00

Cleveland

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	109.00 to	110.00
No. 1 factory bundles	118.00 to	119.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	105.00 to	106.00
Machine shop turn.	27.00 to	28.00
Mixed bor. and turn.	27.00 to	28.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	27.00 to	28.00
Cut structural & plates, 2 ft. and under	135.00 to	136.00
Low phos. punchings plate	135.00 to	136.00
Drop forge flashings	69.00 to	70.00
Foundry steel, 2 ft. & under	105.00 to	106.00
No. 1 RR hvy. melting	120.00 to	121.00
Rails, 2 ft. and under	140.00 to	141.00
Rails, 18 in. and under	141.00 to	142.00
Steel axle turnings	81.00 to	82.00
Railroad cast	135.00 to	136.00
No. 1 machinery cast	135.00 to	136.00
Cupola cast	115.00 to	116.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 busheling	79.00 to	80.00
No. 1 dealer bundles	77.00 to	78.00
No. 2 dealer bundles	49.00 to	50.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	26.00 to	27.00
Low phos. plate	105.00 to	106.00
Structural and plate, 2 ft. and under	113.00 to	114.00
Rails, 2 ft. and under	91.00 to	92.00
Scrap rails, random lgth.	71.00 to	72.00
No. 1 machinery cast	111.00 to	112.00
No. 1 cupola cast	79.00 to	80.00

St. Louis

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	86.00 to	87.00
Foundry steel, 2 ft.	86.00 to	87.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	81.00 to	82.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	98.00 to	99.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 97.00 to	$ 98.00
No. 2 heavy melting	87.00 to	88.00
No. 1 dealer bundles	97.00 to	98.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	97.00 to	98.00
Shredder scrap	103.00 to	104.00
Machine shop turn.	36.00 to	37.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	49.00 to	50.00
Electric furnace bundles	97.00 to	98.00
Elec. furnace, 3 ft. & under	87.00 to	88.00
Structural and plate, 2 ft.	114.00 to	115.00
Structural and plate, 4 ft.	108.00 to	109.00
No. 1 RR hvy. melting	97.00 to	98.00
Scrap rails, random lgth.	99.00 to	100.00
Rails, 18 in. and under	116.00 to	117.00
Angles and splice bars	109.00 to	110.00
No. 1 cupola cast	98.00 to	99.00
Unstripped motor blocks	72.00 to	73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	56.00 to	57.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	120.00 to	121.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	117.00 to	118.00
No. 1 cupola cast	79.00 to	80.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	104.00 to	105.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 50.00 to	$ 51.00
No. 2 hvy. melting	45.00 to	46.00
No. 2 dealer bundles	40.00 to	42.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	63.00 to	65.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	660.00 to	680.00
18-8 turnings	560.00 to	580.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to	$ 76.00
No. 2 hvy. melting	65.00 to	67.00
No. 1 dealer bundles	84.00 to	86.00
No. 2 bundles	38.00 to	40.00
No. 1 busheling	84.00 to	86.00
Shredder scrap	86.00 to	88.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	24.00 to	26.00
No. 1 machinery cast	140.00 to	145.00
Mixed cupola cast	66.00 to	68.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 77.00 to	$ 79.00
No. 2 hvy. melting	67.00 to	69.00
No. 1 dealer bundles	62.00 to	64.00
No. 2 dealer bundles	47.00 to	49.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 72.00 to	$ 74.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	59.00 to	61.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to	116.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 96.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	87.00
No. 2 bundles	72.00 to	74.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to	$108.00
No. 2 hvy. melting	99.00 to	100.00
No. 2 bundles	63.00 to	64.00
Machine shop turn.	26.00 to	27.00
Crushed turnings	50.00 to	51.00
Shredder scrap	107.00 to	108.00
Cut structural plate 2 ft. and under	124.00 to	125.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	106.00 to	107.00

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MAY 25, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING·MANAGEMENT

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ANNUAL STEEL OUTLOOK: SCALING DOWN TO DRIVE PROFITS UP

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PLUS AN INTERVIEW WITH WILLIAM J. DELANCEY, CHAIRMAN OF AISI

MANUFACTURING SYSTEMS SERIES: 16
A CAD/CIM REPORT FROM EUROPE

IRON AGE

VOL. 224, NO. 15

MAY 25, 1981

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

ANNUAL STEEL OUTLOOK

STEEL SCALES DOWN TO DRIVE ITS PROFITS UP

With the reduction in marginal facilities, steel seems poised to sustain prolonged profitability.

By George J. McManus

"Why invest in steel when you can get a higher return from other businesses?" asks R. E. Boni, group vice president in charge of steel for Armco, Inc.

"The answer is we see steel as a turnaround industry," says Mr. Boni.

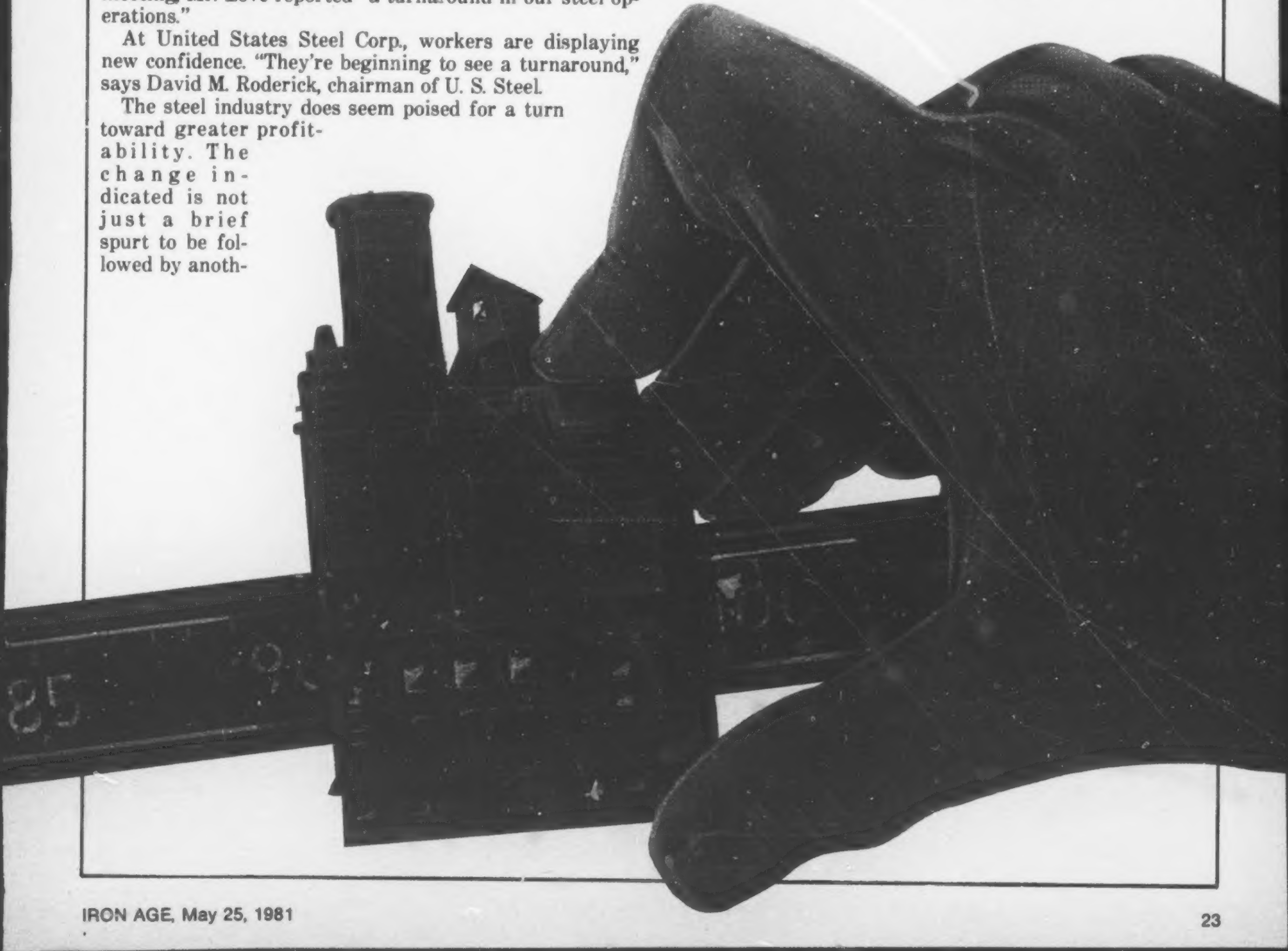
Similar comments come from Howard M. Love, chairman of National Steel Corp. At his company's annual meeting, Mr. Love reported "a turnaround in our steel operations."

At United States Steel Corp., workers are displaying new confidence. "They're beginning to see a turnaround," says David M. Roderick, chairman of U. S. Steel.

The steel industry does seem poised for a turn toward greater profitability. The change indicated is not just a brief spurt to be followed by another long slump. There are all the makings of sustained profitability.

Over the next five to ten years, there should be a relatively close balance of steel supply and demand. U.S. consumption of steel has increased by more than 30 million tons in the last 20 years. There has been little or no expansion of steelmaking capacity in this period.

Given this pattern, the trend lines have to be converging. There will still be



cyclical ups and downs, but average demand for steel will be close to maximum supply.

"I think you're going to get a higher utilization of facilities than we have historically gotten," says Mr. Roderick.

An average operating rate of 90 pct is "not unrealistic," says Donald H. Trautlein, chairman of Bethlehem Steel Corp.

Even in recessions, there should be a relatively comfortable balance of supply and demand.

Steel mills have always been sensitive to volume, but the profit potential with good volume is now greater than ever.

First, most major mills have lowered their break-even points. Secondly, the profit curve above the break-even point is now very steep.

The lowering of break-even levels was evident in 1980 when the steel industry operated just over 70 pct and made a little money. U. S. Steel made money on steel even though raw metal output was the lowest since 1947. Inland Steel Co. lowered its break-even point about 10 pct last year.

The 1980 slump brought a renewed effort to trim fat and squeeze costs. This was merely the climax of the dry spell that has put steel companies through the wringer.

"Over the past six years, our programs have lowered our break-even point and improved our competitive position," says Dennis J. Carney, chairman of Wheeling-Pittsburgh Steel Corp.

"We can operate profitably now at lower levels than ever before," says Mr. Love of National Steel.

Inventory adjustments and property sales entered into the 1980 showing, but the numbers are not all that misleading.

Through plant shutdowns, modernization, and general cost cutting, the big mills have enlarged the profit portion of the volume scale about 10 pct.

The amount of profit in the upper brackets also has increased. Because of insurance, pension and other benefit payments, labor is tending to be more of a fixed cost. The negative impact of this trend showed up in 1980 when volume dropped. The positive effects should be enjoyed with better volume in 1981 and subsequent years.

"I used to say those marginal tons were worth $100," says Mr. Trautlein. "I am convinced they are worth a lot more than that."

A 10 pct rise in volume has a "massive" effect on profits, says Thomas C. Graham, president of Jones & Laughlin Steel Corp. Productivity has been boosted in recent years, says Mr. Graham, but lack of volume has kept this from showing up in a positive way.

The transition from a peak to a strong market should give an added profit boost through its effect on prices. In 1980, says Mr. Carney of Wheeling-Pittsburgh, "our competition engaged in a price war." National Steel referred to "virulent price discounting in the marketplace.

Wheeling-Pittsburgh's unit sales realization rose 4 pct in 1980. As measured by the *Iron Age* composite, published base prices for steel rose 8 pct last year. The two figures reflect different product mixes, but the ratio may not be out of line. Mill officials say discounting probably washed out half the published increases last year. If prices ever firm, the effect will be a 4 pct price increase.

Much has been made of the government's control of steel prices; this has been a serious factor; but the market conditions have probably had much greater impact in holding down prices.

In only two of the last ten years has demand for steel been strong enough to make for price firmness. The mills should have greater success in collecting published prices over the next decade.

All of which is fine if the steel industry is, indeed, moving into a period of sustained high volume. Recent history isn't very encouraging on this point. As has been indicated, there have been only two peak years in the past ten. Last year was a disaster; shipment's were the worst since 1963.

However, 1980 was a fluke. Steel users liquidated up to 8 million tons of inventory. If that hadn't happened, the steel industry would have shipped close to 92 million tons.

Inventory swings are part of the game, but people aren't going to shed 8 million tons of inventory every year. In most years—maybe eight out of ten—demand for steel is going to be based on consumption of steel.

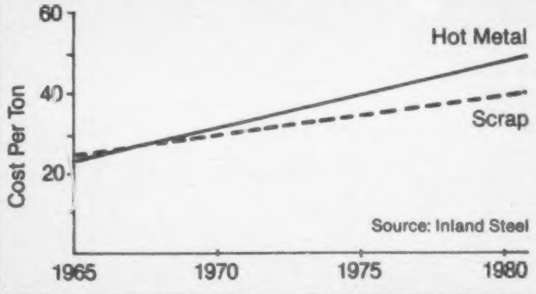
The true level of the current market was brought out by demand in early 1981. By late March, steel operations had risen to more than 85 pct of capacity. The mills were on their way to shipping more than 47 million tons in the first half.

The strength of the first half mar-

"The demand for our product, steel, has got a good future. I'd say, above the trend lines."
Frederick C. Jaicks, Chairman, Inland Steel Co.

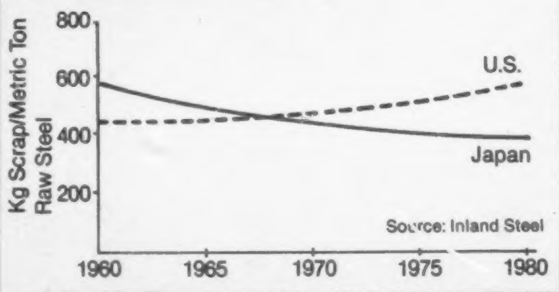
"I used to say those marginal tons were worth $100. I am convinced they are worth a lot more."
Donald H. Trautlein, Chairman, Bethlehem Steel Corp.

15 year cost trends, Scrap and hot metal, 1967 dollars



Source: Inland Steel

Scrap consumed in steelmaking



Source: Inland Steel

ket came as a pleasant surprise. With the auto market depressed and interest rates high and the economy in a fragile state, it was generally expected that steel shipments would dip in the first quarter and not do much better in the second.

Instead, shipments rose in the first quarter and moved up again in the second quarter. When you think about it, there is nothing very surprising about this rise. The U.S. will chew up over 100 million tons of steel in 1981.

Assuming 12 million tons of imports and 2 or 3 million tons of exports, shipments of domestic mills should be over 90 million tons.

The first half of the year is normally stronger than the second half, so a 47-million-ton total for the first six months is not so surprising. A modest economic recovery in the second half could offset the seasonal lag and boost shipments to 94 or 95 million tons.

The point is that even with the economy in a recessed or semi-recessed state, a lot of steel is consumed today.

Steel is still a basic material and as the country grows, the use of steel grows.

In the 1980 recession, consumption of steel was up 30 million tons from 1960. In 1978, which was an average year, consumption was up 43 million tons from 1960.

Meanwhile, steelmaking capacity over the past 20 years has remained stationary—at about 150 million tons. That translates into a shipping capacity of around 110 million tons. That isn't enough to meet the needs of a normal U.S. economy.

There is nothing to suggest an early reversal of the supply or demand trends. Demand will continue to increase. Using a conservative growth factor—1½ pct a year—the American Iron & Steel Institute projects consumption of 134 million tons by 1988.

There are those who feel consumption of steel is due to spurt. The Reagan Administration is addressing the need to speed capital renewal, says Frederick C. Jaicks, chairman of Inland Steel. "The demand for our product, steel, has got a good future," says Mr. Jaicks. "I'd say, above the trend lines."

With or without a spurt, demand for steel will be pulling further away from capacity.

By and large, the domestic industry is not expanding. There are exceptions to this rule. Inland Steel has just added 1.1 million tons of basic capacity. Nucor Corp., Florida Steel Corp. and others continue to build new mini-mills.

There are also cases where new finishing facilities are being installed to go with excess melting capacity. Armco has enough raw steel now to feed the planned seamless mill. U. S. Steel has room for a seamless mill at Fairfield, Ala.

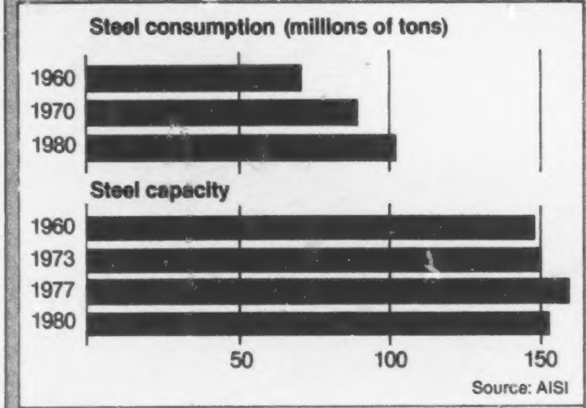
But U. S. Steel is not launching any programs that call for expanding primary capacity. "Do you think you're going to go out and build new coke ovens, new blast furnaces, new steel shops?" asks Mr. Roderick. "I don't think anybody's going to do that."

"It's going to take all the capital we have in order to rationalize what we already have."

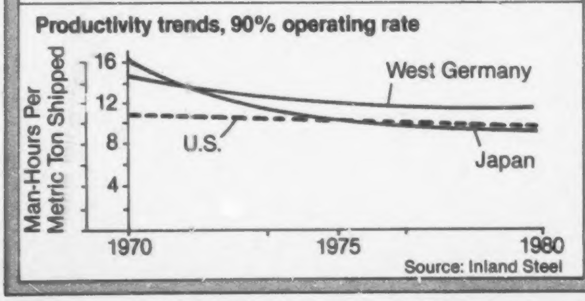
David M. Roderick, Chairman, U.S. Steel Corp.

"We are encouraging people to innovate. And we reward them when they succeed."

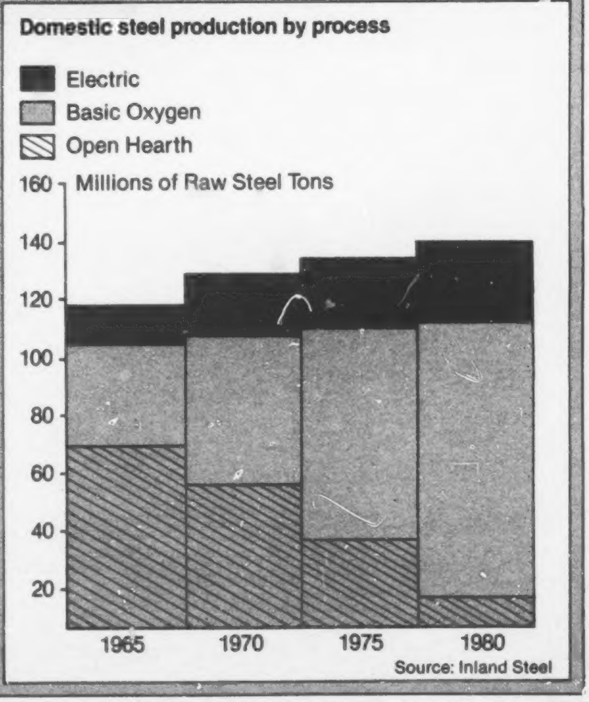
Thomas C. Graham, President Jones & Laughlin Steel Corp.



Source: AISI



Source: Inland Steel



Source: Inland Steel

If anything, the steel industry is shrinking. At Lackawanna, N.Y., plant of Bethlehem Steel, the recent shutdown of a scrap melting vessel subtracted 500,000 tons. National Steel is operating its Great Lakes plant with just two blast furnaces and with just one of two oxygen shops.

This line-up reduces the annual output of Great Lakes to 3 or 3½ million tons. The plant is rated for 6 million tons. That doesn't mean Great Lakes' capacity has been permanently reduced by 3 million tons, but neither does it mean the idle furnaces and work crews are warmed up and ready to go.

"Once you make that decision, you're not just talking about a stand-by piece of equipment," says Mr. Love of National.

Environmental costs and other factors make it impossible to keep unused facilities in a fully ready condition, he indicates.

This point was underlined in April. Although demand was strong and National's lead times were lengthening, the company was sticking to the two-blast-furnace alignment at Great Lakes. Without greater assurance of sustained demand, National was unwilling to put on workers and furnaces.

Without considering semi-retired facilities, the industry's raw steel capability declined by more than 6 million tons from 1977 to 1980.

The contraction could continue. AISI compares estimated 1988 consumption of 134 million tons with domestic shipping capacity in the same year as low as 84 million tons.

AISI has a more optimistic projection, but if industry statements mean anything, the best that can be expected is the maintaining of existing capacity.

Apart from facilities, there is a tendency to shed what Mr. Roderick calls "sleeping assets." U. S. Steel reduced its finished and semifinished inventories last year by an amount equal to $232 million. National Steel cut its in-plant inventory 30 pct. U. S. Steel, National and others have sold portions of their coal reserves. Armco plans to sell its interest in two iron ore companies.

The mills still have coal and iron to burn, but property sales bring out the mood of the industry. The general aim is to scale down and cut back. Bethlehem is bearing down on what it calls "body count." With labor costs becoming more permanent, Bethlehem and others are reluctant to add manpower with every little market spurt.

In summary, there is no general inclination to expand. "From a realistic point of view," says Mr. Roderick, "the industry has no choice. It's going to take all the capital we have in order to rationalize what we already have. There's a $2 billion shortfall just to stand still."

At the same time, steel men see opportunities in other industries. National Steel's aluminum operation yielded a 30 pct return on investment last year. For $241 million in 1980, National acquired United Financial Corp. of California. The financial operation had an after-tax profit of more than $31 million last year.

U. S. Steel has been making most of its money on what it classes as non-steel operations. With steel growth lagging behind the overall economy, U. S. Steel expects to have half its sales in non-steel businesses by 1981.

Allegheny International has diversified itself completely out of stainless and electrical steel. Armco plans to reduce the carbon steel share of its net assets from 40 pct in 1980 to 28 pct in 1984.

Not all the outside ventures have been big winners. U. S. Steel's chemical operation was only a little more profitable than steel last year. Bethlehem lost money on a plastics operation in 1980. For the retail operation of Cyclops Corp., 1980 was a "year below expectations." The profit contribution of Cyclops' steel business was somewhat larger than the steel sales share.

It's also worth noting that the division between steel and non-steel can be fairly arbitrary. Armco is spending $400 million on a new seamless mill. This won't add to steel assets because seamless production is now classed as an oil field operation. U. S. Steel's big profit maker has been its transportation system, which is classed as non-steel.

Nevertheless, diversification has logic and pressure behind it. When steel shipments fell 4 pct in 1970, Armco's earnings fell 55 pct. After sweeping diversification, Armco's profit rose 7 pct in 1980 despite a 17 pct drop in steel industry shipments.

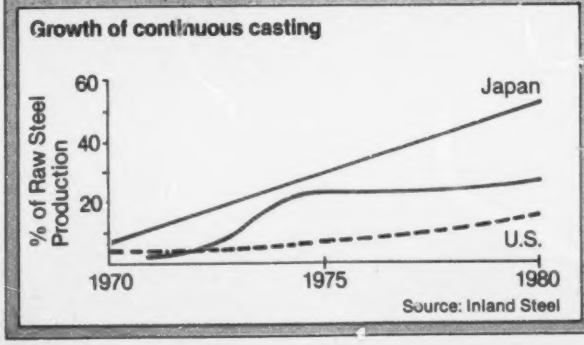
Steel has consistently been one of

"Once you make that decision (to shut down a facility), you're not just talking about a piece of stand-by equipment."

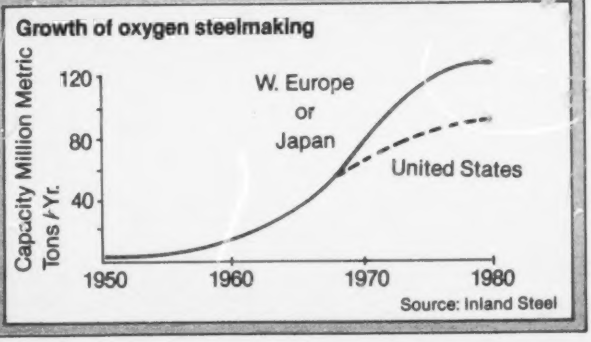
Howard M. Love, Chairman, National Steel Corp.

"Over the past six years, our programs have lowered our break-even point and improved our competitive position."

Dennis Carney, Chairman, Wheeling Pittsburgh Steel Corp.



Source: Inland Steel



Source: Inland Steel

the least profitable of the major industries. The textbooks say profits are a mechanism for allocating resources. Capital should flow away from low profit industries until this process corrects the imbalance of supply and demand.

The textbooks also say the correction will eventually restore profitability to well positioned companies. In steel today, the market situation has been corrected and over-corrected. After a long period of attrition, the steel industry should be on the brink of a profitable era. This is all the more likely because the industry as a whole is not about to anticipate future profits by expanding now.

Instead, the industry is pushing to make existing facilities more efficient. Mr. Roderick speaks of a push to rationalize capacity. The word, rationalize, is usually associated with the planned economies of foreign countries. In theory, government control should make it possible to arrange an industry in an orderly manner.

As a practical matter, political and social considerations have hampered efforts to reshape foreign steel industries. In this country, there are obvious difficulties in trying to rationalize an industry made up of private, separate steel companies. The difficulties were brought out in the Sixties when the market was overloaded with new strip mill capacity.

It isn't easy, but there is now a conscious, determined effort to rationalize the domestic steel industry. The negative aspect of this effort involves the scrapping of old facilities and the deleting of unprofitable products.

"There are obsolete plants and equipment that must be closed," says William R. Roesch, president of U. S. Steel.

Mr. Roesch goes on to discuss the positive side of the coin. "This will then allow the channeling of available capital to those facilities which can be modernized or expanded and made profitable."

Plant shutdowns are very negative, but there are times when there is no choice. "The alternative," says Mr. Roesch, "is continue to operate, continue to lose money, and end up being forced to close anyway."

U. S. Steel says the steel plants it closed would have lost $75 million in 1980. The corporation's operating profit on steel last year was $58 million.

It's doubtful that Bethlehem would have made any money last year without the earlier shutdowns at Lackawanna and at Johnstown, Pa. "We have reduced our fixed cost; there's no doubt about that," says Mr. Trautlein.

Plant shutdowns have resulted in direct cost reduction. They have also helped by concentrating volume. The better facilities can operate at more productive levels. The extent of recent consolidation showed up in the week of April 4th when the steel industry produced 2.615 million tons and operated at 87.4 pct of capacity. In April of 1977, the exact same weekly tonnage came to 83.7 pct of capacity. (AISI has made a slight change in the definition of capability.)

As part of the consolidation, the best facilities are being made better. "One of the things the whole industry has got to do is get more with fewer facilities," says Mr. Roderick. "We can afford a one-on-one replacement."

To get more from less, steel companies are investing in new technology. Steel spending has been relatively light in recent years but only in relation to enormous needs. Very large sums are being expended.

For all its diversification, Armco has spent $700 million on steel operations in the last five years. Wheeling-Pittsburgh has spent $395 million in the last six years and is now planning a $500 million program. Inland Steel has just completed a $1 billion modernization and expansion.

National has equipped itself to continuously cast 55 pct of its steel. National's Granite City plant is now into top and bottom blowing of oxygen vessels. U. S. Steel has announced four new continuous casters, a big seamless mill and a new rail mill.

Throughout the industry, operators are boosting blast furnace temperatures and pressures. Charge materials are being upgraded. Stoves are being rebuilt and new tops are being installed. As Mr. Roderick indicates, the aim is to get more output from fewer units.

There is still much to be done, but a lot has been done. The domestic industry is equipped with modern strip mills. More than 90 pct of the industry's limited output last year came from oxygen vessels or electric furnaces.

There is still the problem of accom-

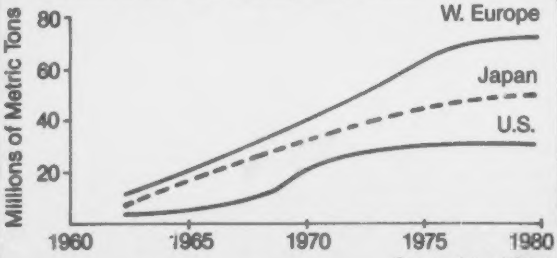
"Why invest in steel when you can get a higher return from other businesses? The answer is we see steel as a turnaround industry."

Robert E. Boni, Group Vice President, Armco, Inc.

"The alternative is continue to operate, continue to lose money, and end up being forced to close anyway."

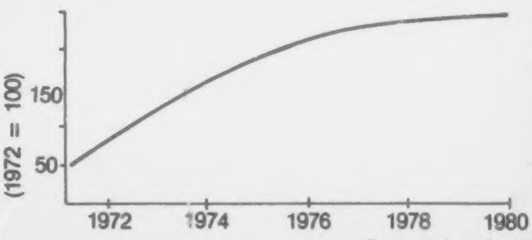
William R. Roesch, President, U.S. Steel Corp.

Generation II hot strip mill capacity trends



Source: Inland Steel

Continuous casting productivity trends, Inland



Source: Inland Steel

modating the scale of steel technology. A new strip mill provides 4 or 5 million tons of capacity and can cost half a billion dollars. To provide such a mill as an addition to National's Weirton Works would mean a 50 pct expansion of sheet capacity. Even in the best of times, the sheet market doesn't grow in 50 pct steps.

In view of this mis-match, many steel men have concluded they can't afford all-purpose mills to serve all customers. People are thinking in terms of more limited, specialized equipment. This ties in with the trend toward greater product specialization.

"We shall focus on the best products and the best markets," says Mr. Boni of Armco. His company is concentrating on products where it has a good market share and feels it has a quality edge.

Others are likewise sifting and sorting to find their own special niches. The integrated plants have tended to back away from merchant markets. The smaller electric furnace shops are prospering in the markets.

Apart from this broad structural change, there are numerous subtle shifts within product lines. Wheeling-Pittsburgh discontinued production of lithographed tin plate in 1974. The company sold its Thomas Strip Division in 1975 and its Johnson Steel and Wire subsidiary in 1977.

Carpenter Technology Corp., with its consistently high profits, has mastered the art of identifying the right markets and products. Carpenter makes money by rolling steel for surgical implants and other highly specialized items.

Within the tonnage markets, there is probably going to have to be selective action. New continuous annealing lines will be needed to meet the automotive requirement for high strength sheet.

"It's not going to take very many continuous annealing lines before the supply is such that it is no longer a profitable product," says Mr. Boni.

His thought is that close attention to profit margins will steer individual companies in the right direction, while capital costs will discourage the wrong moves. The effect, hopefully, will be a consolidation of volume in plants best equipped to make particular products.

The structural changes are important, but in the immediate situation, the biggest profit lift is coming from straight cost reduction. There is a concerted effort to boost efficiency through more intelligent, energetic use of existing facilities.

"You have to keep driving costs down," says Mr. Love of National.

The drive takes in the participation teams which are called for by the labor contract and which are slowly being organized. It includes a push for greater initiative at all levels.

"We are encouraging our people to innovate," says Mr. Graham of Jones & Laughlin. "And we reward them when they succeed."

Within his company and on the outside, Mr. Graham has taken the lead in pressing for greater use of the brains within the work force. "Our purpose is to tap the full potential of our hourly employees," he says.

This approach has produced impressive results. In March of last year, three J & L electric furnaces at Warren, Mich., produced the same tonnage that took five furnaces in 1974. One element in the improvement was a reduction in vessel relining time from 24 hours before to two hours now.

If imports rise faster than the market grows, the domestic industry will shrivel.

Mr. Graham cites other examples. "In 1970, just following the merger with Youngstown Steel, we were making about one million tons of raw steel per month with 12 blast furnaces. Today, we are making the same tonnage but we are doing it with eight blast furnaces."

Others are likewise leaning on costs. Wheeling-Pittsburgh reduced its employment by one-third from 1974 to 1980. The company was able to negotiate a reduction in incentive rates last year.

The payoff from cost reduction will come when the mills operate at high levels for a long period. There is the potential for sustained high-levels production, but there is, of course, one possible fly in the domestic ointment. Foreign steel. Imports took more than a third of the growth in the U.S. market from 1960 to 1980. Uncertainty about future foreign penetrations is a major element in the decisions of domestic mills.

In its worst-case assumption for the future, AISI projects imports as high as 50 million tons by 1988. This estimate assumes a drastic contraction of the domestic industry. In the absence of new tax and regulatory policies, AISI argues, the domestic industry will shrink and the U.S. will be dependent on foreign producers for more than 30 pct of its steel.

It could be stated the other way. If imports rise faster than the market grows, the domestic industry will shrivel. Mr. Roderick feels government trade policies will decide the matter.

"If they just say—to hell with the steel industry; we're not going to enforce anti-dumping laws—then the profitability will be very marginal. The shrinkage will take place faster and I think people would be inclined to diversify."

Tending to hold down imports now is the Trigger Price Mechanism. This was re-instated by the Carter Administration last year with the pledge that it would remain for three years. Steel men feel the Reagan Administration will honor this commitment.

The trigger system has been effective in holding down shipments of sheet to the Midwest. In February, imports of cold-rolled sheet were down 70 pct from February of 1980. Imports of hot-rolled sheet were off 67 pct.

The trigger system seems to be helping, but it is always subject to change. A number of European mills are arguing that their costs are such that they should be exempted from the system. There is opposition to trigger pricing within the Administration.

Should the trigger system prove ineffective, steel companies can seek direct enforcement of the trade laws. Domestic mills no longer have to choose between dumping complaints and the trigger system. If the foreign penetration exceeds 15.3 pct in a weak market, the companies may file dumping suits without having the trigger system removed.

The ideal, long-term solution to the trade situation would be to make domestic steel production so efficient that foreign mills would find the U.S. market unattractive. This may not be an unrealistic aim. There are those who are convinced the struggle for domestic and world markets will ultimately be resolved on the basis of relative costs. There are also those who feel their own companies will be winners in this kind of competition. ☐

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PROFITS: STEEL MIXED, NONFERROUS SLICED

In first quarter there were bright spots for some steelmakers, but also disappointments for others. Nonferrous earnings hurt by recession.

By George J. McManus and Robert J. Regan

Happy days aren't here quite yet for the steel industry.

The first quarter, at least, did not show a general turn toward prosperity. There were individual bright spots, but there were also some disappointments.

United States Steel Corp. continued its winning ways with earnings of more than $270 million in the first quarter. That was up 115 pct from the first quarter of 1980. It came to a gaudy 8 pct of sales.

U. S. Steel got a pre-tax lift of $140.5 million from the lease of the Manor coal property and from various real estate transactions. With its large cash accumulation, U. S. Steel received $113.5 million in interest and dividend income.

In addition, however, there were operating improvements. "All industry segments reported first quarter operating profits," said David M. Roderick, chairman of U. S. Steel. Cited by Mr. Roderick were "performance improvements—particularly in steel."

U. S. Steel's showing helped boost the whole industry. Averaged together, earnings of the seven largest steel companies were up 12 pct from the first quarter of 1980. The average return on sales was 4.1 pct.

Among the companies that depend primarily on steel for revenue, there were mixed results. Earnings of Bethlehem Steel Corp. were down 52 pct from the first quarter of 1980. The profit of Inland Steel Co. was off 20 pct.

On the other hand, Republic Steel Corp. reported earnings that were up 58 pct from 1980. The operating income of Jones & Laughlin Steel Corp. rose from $17 million in the first quarter of 1980 to $46.4 million in the first quarter of 1981.

A major element in the 1981 performance was volume. Shipments in the first quarter were up from the fourth quarter of 1980 but they were down about 1 million tons from the first quarter of last year.

Market conditions varied widely with product mix and location. "Demand for sheet mill products that traditionally constitute 80 pct of our shipments, has been severely affected by the continuing depression in new car sales and construction," said Dennis J. Carney, chairman of Wheeling-Pittsburgh Steel Corp.

With its shipments down 14 pct from the first quarter of 1980, Wheeling-Pittsburgh's earnings were off 36 pct. Extremely vulnerable to recessions in the past, Wheeling-Pittsburgh did earn more than $4 million in the first quarter.

U.S. Steel's showing in first quarter—up 115 pct from year ago—helped boost the whole industry.

Bethlehem operated at only 75 pct of capacity in the first quarter. Both shipments and raw steel output were down from the first quarter of 1980.

Like Wheeling-Pittsburgh, National Steel depends on sheet production and to a considerable extent, the auto market. National's earnings in the first quarter were down 85 pct from the first quarter of 1980. The year-to-year comparison was distorted by a $95 million coal sale in the first quarter of last year. Actual operating profits on steel were up from 1980.

The auto slump and other factors tended to hold down profits in the first quarter. There was not a good test of profit potentials, but it can't be said that the indications were promising. Of the largest producers, three earned less than 3 pct on sales. Two of these—Bethlehem and Inland—depend almost entirely on steel for revenues.

The second quarter of 1981 should give a better reading on the steel industry's condition. Steel shipments will be up a good 2 million tons in the spring quarter. Prices are gradually firming. It now appears that the Trigger Price Mechanism (TPM) is having a major impact on steel imports.

On the last point, imports of 3.6 million tons in the first quarter were down about 10 pct from the first quarter of 1980. The decline would have been steeper had not the shortage of oil country tubular products pulled a lot of pipe into the country. Importers complain that the present trigger system amounts to an embargo.

There is, as usual, a cloud in the otherwise bright domestic picture. "During the second quarter," said Mr. Carney of Wheeling-Pittsburgh, "we expect higher operating levels and improved earnings, although costs are being adversely affected by the coal strike."

The coal strike is costing U. S. Steel about $1 million a day. The strike has not affected operations; U. S. Steel has enough coal and coke to go through most of the summer without cutbacks.

Despite the coal situation and the inconclusive first quarter results, many steel men are convinced a turnaround is in progress. "If 1979 was a year of decisions," says Mr. Roderick, "then 1980 was the year of the turnaround. It is my opinion that we will be able to call 1981 a year of confirmation."

One source of Mr. Roderick's optimism is U. S. Steel's huge cash accumulation. "Our cash position, currently at $1.6 billion, is a strong one," he told the annual meeting of U. S. Steel's shareholders.

This position will be increased by another $700 million in the third quarter when the sale of coal reserves to Standard Oil of Ohio is due to be completed.

Invested in short-term securities, U. S. Steel's cash is currently earning

1st Quarter Earnings for Steel and Nonferrous

Steel: Happy Days Aren't Here Yet

In Millions of Dollars

	Earnings				Sales		
	'81 E/S	1st Q '81	1st Q '80	Pct Change	1st Q '81	1st Q '80	Pct Change
USS	8%	270.9	126.0	+115	3,399.4	3,166.1	+7.4
Bethlehem	1.4%	25.9	54.4	−52	1,858.1	1,929.4	−3.7
Armco	4.2%	69.0	68.1	+1.3	1,640.0	1,350.0	+21
National	1.5%	15.7	107.1	−85	1,060.0	1,160.0	−8.6
Republic	3.3%	32.6	20.6	+58	1,110.0	995.6	+11
Inland	2.2%	21.42	26.76	−20	968.65	918.80	+5.4
LTV	2.7%	47.3	26.4	+79	1,752.1	1,455.1	+20
Total	4.1%	482.82	429.36	+12	11,788.25	10,975.0	+7.4
Alleg. Int'l.	4.3%	20.8	11.4	+82	487.3	241.0	+102
Wheel. Pgh.	1.4%	4.19	6.50	−36	295.29	309.21	−4.5
Kaiser	12%	32.67	85.32	−62	279.81	244.31	+15
Interlake	3.8%	10.16	11.30	−10	267.05	294.83	−9.4
Cyclops	2.2%	5540	6.18	−13	250.02	234.83	+6.5
McLouth	——	(4.14)	(2.61)	——	180.13	179.74	+0.2
CF&I	5.5%	9.83	7.80	+26	177.80	163.73	+8.6
Carpenter	8.4%	13.03	13.59	−4.1	155.79	159.10	−2.1
Copperweld	5.5%	7.83	5.28	+48	143.36	131.58	+9.0
Nucor	6.5%	8.59	15.46	−44	133.08	143.53	−7.3
Lukens	1.7%	1.51	(0.65)	——	91.29	(87.32)	——
Florida	7.1%	5.75	4.30	+34	80.75	72.42	+12
Eastmet	——	(1.39)	2.84	——	76.76	76.65	+0.2
Laclede	4.0%	2.75	1.32	+108	68.84	64.34	+7.0
Phoenix	——	(2.16)	0.18	——	47.72	44.74	+6.7

Nonferrous: Lower Prices Hurt

In Millions of Dollars

	Earnings			Sales		
	1st Q '81	1st Q '80	Pct Change	1st Q '81	1st Q '80	Pct Change
Alcan	$82.0	$148.0	−44.6	$1,305.0	$1,310.0	——
Alcoa	101.2	143.5	−29.5	1,319.8	1,314.0	——
Amax	70.1	140.3	−50.0	761.4	872.0	−12.7
Asarco	18.3	154.4	−88.1	384.8	662.9	−41.6
Freeport-McMoRan	45.6	43.1	+5.8	224.7	163.7	+37.3
Hecla	3.1	25.0	−87.6	——	——	——
Inco	26.9	97.5	−72.4	717.0	820.1	−12.6
Kaiser	68.1	73.5	−7.3	856.4	847.8	+1.0
Kennecott	34.6	61.5	−43.7	547.9	645.2	−15.1
Newmont	30.8	82.1	−62.5	——	——	——
Noranda	60.7	101.3	−40.0	695.5	713.2	−2.5
Olin	28.4	22.1	+28.5	525.2	482.5	+8.8
Phelps Dodge	28.9	49.3	−41.4	367.1	435.3	−15.7
Reynolds	33.0	52.1	−36.7	846.2	876.2	−3.4
Texasgulf	84.9	116.6	−27.2	275.3	280.0	−1.7

Amax: Net income is before dividends on preferred stock. **Asarco:** Net for 1980 period includes $20.9 million credit for cumulative effect on prior years of changes in accounting policies, net of tax effect. **Freeport-McMoRan:** Figures for both years reflect merger of Freeport Minerals and McMoRan Oil & Gas. **Kaiser:** Figures for 1st quarter '80 restated to reflect consolidation of Kaiser Aluminum Europe Inc. **Kennecott:** Net for 1st Quarter '81 includes $42.1 million gain on sale of one/third interest in Chino Mines Div. facilities to Mitsubishi Corp. **Noranda:** Canadian funds **Texasgulf:** Net for 1st Quarter '80 includes $38.1 million credit for cumulative effect on prior years of an accounting change.

about 16 pct. The yield on interest and dividends rose from under $48 million in the first quarter of 1980 to over $133 million in the first quarter of 1981.

The steel industry as a whole earned 8 pct on its investment in 1980 and 7 pct in 1979. Comparing these numbers to current interest rates, steel officials must be tempted to convert all their assets into cash and avoid the heartburn that goes with making steel.

The serious implication of U. S. Steel's conversion to cash is that the steel industry has enormous material and property resources. By turning only a fraction of its "sleeping" assets into cash, the industry may be able to relieve its capital squeeze.

Another interesting development is U. S. Steel's use of the oil industry's credit for financing the new seamless mill at Fairfield, Ala. U. S. Steel will be leasing the mill. Various oil companies are committed to making payments equal to the lease charges.

Mr. Roderick indicates this arrangement was only possible because of the unique circumstances in the oil country market. The drilling boom has created a shortage of seamless pipe. The oil companies want assurances of domestic supply and these companies are flush enough to secure favorable financing.

While the oil country situation is unique at the moment, it may not be in the future. At some future date, a domestic steel shortage is probable. At that time, steel users may be willing and eager to provide financial backing of expansion projects.

At the moment, few users or producers are worrying about steel shortages. The steel market collapsed in the spring of 1980. No collapse is now in sight but there has been a recent easing of orders. Interest rates, which triggered last year's downturn, are again climbing. The auto industry is still in a slump.

A severe downturn at this point would be disheartening to steel executives. Another round of price increases is probably due in June or July. Proposed price increases last summer were rolled back by the weak market and the producers wound up discounting bar and sheet prices.

On paper, another market slide is unlikely. Steel users liquidated 7 million or 8 million tons of inventory in 1980.

There has been a modest replenishment of stocks in recent months, but nothing that should leave excess inventory. A major convulsion is almost impossible.

Nonferrous

The business recession sliced some big chunks out of first quarter profits of leading nonferrous metals producers and fabricators.

Sales volume was down in most cases, but by considerably less on a percentage basis than was the case for profits. What hurt most were lower prices for aluminum, copper, lead, nickel, gold and silver—particularly when matched against prices realized during the speculation-fueled boomlet of the first quarter of 1980.

Phelps Dodge Corp. noted that first quarter copper prices averaged 26 pct under the initial 1980 period. Despite an 8.8 pct increase on tonnage sales to 89,400 tons, the company's net income fell 41.4 pct to $28.9 million and sales were off 15.7 pct to $367.1 million.

Recession sliced big chunks out of first quarter profits of leading nonferrous producers.

Kennecott Corp. sustained an operating loss of $7.5 million, compared with the $61.5 million earned in the first quarter last year. It took a $42.1 million gain on the transfer of copper assets—a one-third interest in Kennecott's Chino Mines division to Mitsubishi Corp.—to bring net income for the period just ended to $34.6 million. The company's copper sales were off 10 pct to 87,700 tons and Kennecott's averaged realized price—which is tied to the Comex price—was 32 pct off the 1980 pace.

Asarco Chairman Charles F. Barber noted that, beside a 28 pct drop in the company's average copper price, silver averaged 60 pct lower and the domestic price of lead was down 33 pct. Zinc, on the other hand, was higher by 9.5 pct. Mr. Barber noted that speculative forces this year tended to push prices downward, particularly in the case of copper.

Most of the weakness in aluminum prices was confined to the overseas market—particularly where ingot was concerned. U.S. aluminum producers were heavy exporters during most of 1980, but the volume slipped considerably in the first quarter of 1981.

North America's four largest aluminum producers—Alcoa, Alcan, Reynolds Metals and Kaiser Aluminum—sustained a 31.8 pct drop in aggregate first quarter profits to $284.3 million. Aggregate sales were off a slim 0.5 pct to $4.33 billion, but the quartet's aggregate shipments were down 7.8 pct to 1.42 million short tons.

Alcan President David M. Culver detected "some indications of strengthening in European markets" that could lead to a stronger second half. Alcoa reported some strength in markets for common alloy aluminum products and Reynolds Metals was looking for "some gradual improvement" in the current period and better sales and shipments in the second half.

Kaiser's broad-based 5 pct hike in prices of ingot and mill products found only minimal immediate support from its North American competitors, however.

Kaiser tied a three-week "waiting period" to its trial balloon, apparently in hopes that the other producers by then could have a better look at second half prospects. For its own part, Kaiser tied its scheduled price hikes to higher labor and energy costs. The move came as the aluminum industry prepared to start on the second leg of the generous three-year wage contracts negotiated last spring.

Inco's nickel deliveries fell to 93 million lbs from the 113 million lbs delivered in the first quarter last year, but still were 16 pct ahead of the 80 million lbs shipped in the fourth quarter of 1980. Nickel prices were being discounted from mid-November through most of the first quarter.

The company's nickel inventory edged up to 162 million lbs as the second quarter got under way from 155 million lbs at the start of the year, but was twice as large as the 80 million lbs held a year earlier.

Inco's cobalt shipments jumped to 780,000 lbs in the first quarter from 230 million lbs in the year-earlier period, reflecting increased capacity, but were well below the 970 million lbs shipped in the fourth quarter of 1980.

Amax said higher molybdenum prices partly offset the impact of lower molybdenum shipments and higher operating costs. Reduced shipments and prices lowered copper earnings. Pierre Gouseeland, chairman and chief executive officer, said the 50 pct drop in first quarter net reflected a continued sluggish world economy, but Amax is looking for "a rebound in the second half." □

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EFFECTIVE MAY 4, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	307	300	314	290
Buffalo	84	68	73	62
Pittsburgh	473	485	464	446
Youngstown	154	139	154	134
Cleveland	161	174	182	160
Detroit	173	181	193	194
Chicago	633	615	668	553
Cincinnati	94	104	106	118
St. Louis	93	102	101	86
Southern	265	272	265	268
Western	151	160	151	143
U.S. Production	2,588	2,600	2,671	2,454

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective May 4, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,588	2,600	44,218	43,006
Capability Utilization Rate	86.5	86.9	84.8	83.2

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$96.50	$99.83	$105.83	$82.83
No. 2 bundles	$ 71.17	$ 73.83	$ 75.50	$ 58.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$106.50	$108.50	$117.50	$89.50
No. 1 steel, Philadelphia	84.50	88.50	91.50	88.50
No. 1 steel, Chicago	98.50	102.50	108.50	70.50
No. 1 bundles, Detroit	98.50	108.50	106.50	71.50
Low Phos., Youngstown	101.50	109.50	113.50	90.50
No. 1 mach'y cast., Pgh.	104.50	104.50	104.50	94.50
No. 1 mach'y cast., Phila.	119.50	121.50	121.50	124.50
No. 1 mach'y cast., Chi.	127.50	127.50	129.50	131.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective May 4, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	83.65-86.00	83.65-87.00	5/1/81
Lead	38.00	36.00	4/ 8/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	45.25-46.25	43.25-45.25	5/1/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$481.50
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$10.89
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

April 27—585.95
April 28—577.80
April 29—575.63
April 30—567.74
May 1—Holiday

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80½	71¼
Yellow brass	68¾	63⅝
Red brass	74⅛	67⅝
Comm. bronze	76	68⅞
Mang. bronze	67½	65¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	77
No. 2 copper wire	67
Light copper	58

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	63
Light copper	54
No. 1 composition	72
No. 1 comp. turnings	70
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	33
Radiators	54

Aluminum

New mixed clips	41	—42
Old sheet	36	—37
Old cast	36	—37
Clean dry borings	37	—38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	39	—40
Mixed L.C. clips	31	—32
Old sheets and cast	25	—26
Boring and turnings	22	—23
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	43	—44
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAY 4, 1981

MATERIALS NEWSFRONT

(EFFECTIVE May 4, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$106.00 to $107.00
No. 2 hvy. melting	96.00 to 97.00
No. 1 dealer bundles	120.00 to 121.00
No. 1 factory bundles (auto)	121.00 to 122.00
No. 2 bundles	81.00 to 82.00
No. 1 busheling	119.00 to 120.00
Machine shop turn.	29.00 to 30.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	127.00 to 128.00
Heavy turnings	96.00 to 97.00
No. 1 RR hvy. melting	117.00 to 118.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	108.00 to 109.00
RR specialties	122.00 to 123.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 730.00
18-8 turnings	615.00 to 620.00

Chicago

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles (auto)	115.00 to 116.00
No. 2 dealer bundles	74.00 to 75.00
Unburned bundles	60.00 to 61.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	100.00 to 101.00
Machine shop turn.	51.00 to 52.00
Mixed bor. and turn.	53.00 to 54.00
Shoveling turnings	55.00 to 56.00
Cast iron borings	74.00 to 75.00
Low phos. forge crop	123.00 to 124.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	125.00 to 126.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	98.00 to 99.00
Reroller rails	125.00 to 126.00
Rails, 2 ft. and under	127.00 to 128.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	169.00 to 170.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	122.00 to 123.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to $ 86.00
No. 2 hvy. melting	72.00 to 75.00
No. 1 dealer bundles	106.00 to 109.00
No. 2 dealer bundles	56.00 to 59.00
No. 1 busheling	103.00 to 106.00
Shredder scrap	97.00 to 100.00
Machine shop turn.	38.00 to 41.00
Mixed bor. and turn.	38.00 to 41.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	105.00 to 108.00
Low phos. 2 ft. punchings	124.00 to 127.00
Electric furnace bundles	122.00 to 125.00
RR specialties	104.00 to 107.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	85.00 to 88.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	118.00 to 121.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to $ 79.00
No. 2 hvy. melting	76.00 to 77.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	47.00 to 48.00
No. 1 busheling	95.00 to 96.06
Drop forge flashings	83.00 to 84.00
Machine shop turn.	41.00 to 42.00
Mixed borings and turn.	38.00 to 39.00
Shoveling turnings	43.00 to 44.00
Cast iron borings	39.00 to 40.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	84.00 to 85.00
Automobile cast	111.00 to 112.00
Stainless	
18-8 bundles and solids	670.00 to 680.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	155.00 to 165.00

Youngstown

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 dealer bundles	62.00 to 63.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	30.00 to 31.00
Low phos. plate	101.00 to 102.00
Electric furnace bundles	101.00 to 102.00
Galvanized bundles	88.00 to 89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles	114.00 to 115.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	26.00 to 27.00
Cut structural & plates, 2 ft. and under	131.00 to 132.00
Low phos. punchings plate	131.00 to 132.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	97.00 to 98.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	130.00 to 131.00
Rails, 18 in. and under	131.00 to 132.00
Steel axle turnings	71.00 to 72.00
Railroad cast	125.00 to 126.00
No. 1 machinery cast	125.00 to 126.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	575.00 to 585.00
18-8 turnings	450.00 to 475.00
430 bundles	125.00 to 135.00

Buffalo

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	55.00 to 56.00
No. 1 busheling	74.00 to 75.00
No. 1 dealer bundles	72.00 to 73.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	106.00 to 107.00
No. 1 cupola cast	74.00 to 75.00

St. Louis

No. 1 hvy. melting	$ 94.00 to $ 95.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	94.00 to 95.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 96.00 to $ 97.00
No. 2 heavy melting	87.00 to 88.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	76.00 to 77.00
No. 1 busheling	95.00 to 96.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	44.00 to 45.00
Cast iron borings	44.00 to 45.00
Electric furnace bundles	96.00 to 97.00
Elec. furnace, 3 ft. & under	87.00 to 88.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	109.00 to 110.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	96.00 to 97.00
Rails, 18 in. and under	115.00 to 116.00
Angles and splice bars	106.00 to 107.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	72.00 to 73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to $ 76.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	88.00 to 89.00
No. 2 bundles	51.00 to 52.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 50.00 to $ 51.00
No. 2 hvy. melting	45.00 to 46.00
No. 2 dealer bundles	40.00 to 42.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	63.00 to 65.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	660.00 to 680.00
18-8 turnings	560.00 to 580.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to $ 70.00
No. 2 hvy. melting	60.00 to 62.00
No. 1 dealer bundles	82.00 to 84.00
No. 2 bundles	36.00 to 38.00
No. 1 busheling	82.00 to 84.00
Shredder scrap	84.00 to 86.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	22.00 to 24.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	62.00 to 64.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 74.00 to $ 76.00
No. 2 hvy. melting	64.00 to 66.00
No. 1 dealer bundles	59.00 to 61.00
No. 2 dealer bundles	44.00 to 46.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 71.00 to $ 73.00
No. 2 hvy. melting	61.00 to 63.00
No. 1 dealer bundles	58.00 to 60.00
No. 2 dealer bundles	41.00 to 43.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 96.00 to $ 98.00
No. 2 hvy. melting	85.00 to 87.00
No. 2 bundles	72.00 to 74.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 82.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	67.00
Bush. new fact. prep'd.	87.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	93.00 to 94.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	20.00 to 21.00
Crushed turnings	44.00 to 45.00
Shredder scrap	101.00 to 102.00
Cut structural plate 2 ft. and under	118.00 to 119.00
Unstripped motor blocks	83.00 to 84.00
Cupola cast	99.00 to 100.00

EFFECTIVE MAY 11, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	297	307	305	282
Buffalo	86	84	72	61
Pittsburgh	456	473	461	444
Youngstown	149	154	139	119
Cleveland	175	161	181	161
Detroit	178	173	183	191
Chicago	639	633	654	557
Cincinnati	95	94	114	117
St. Louis	98	93	100	91
Southern	264	265	269	265
Western	158	151	142	152
U.S. Production	2,595	2,588	2,620	2,440

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective May 11, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,595	2,588	46,813	45,315
Capability Utilization Rate	86.7	86.5	84.9	82.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$96.50	$96.50	$107.17	$80.83
No. 2 bundles	$ 68.83	$ 71.17	$ 75.17	$ 55.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$106.50	$106.50	$117.50	$86.50
No. 1 steel, Philadelphia	84.50	84.50	91.50	85.50
No. 1 steel, Chicago	98.50	98.50	112.50	70.50
No. 1 bundles, Detroit	98.50	98.50	106.50	71.50
Low Phos., Youngstown	101.50	101.50	113.50	83.50
No. 1 mach'y cast., Pgh.	104.50	104.50	104.50	92.50
No. 1 mach'y cast., Phila.	119.50	119.50	121.50	120.50
No. 1 mach'y cast., Chi.	129.50	127.50	129.50	126.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective May 11, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-[illegible].00	10/13/80
Copper (C)	84.15-86.00	8[illegible]-85.00	5/11/81
Lead	38.00	36.00	4/ 8/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	45.25-46.25	43.25-45.25	5/ 1/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$485.75
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$11.33
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

May 4—569.91
May 5—558.81
May 6—556.08
May 7—556.60
May 8—556.60

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	70⅛	65
Red brass	75⅞	69⅜
Comm. bronze	77⅝	70⅝
Mang. bronze	68⅝	66⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	77
No. 2 copper wire	67
Light copper	58

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	63
Light copper	54
No. 1 composition	72
No. 1 comp. turnings	70
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	33
Radiators	54
Aluminum	
New mixed clips	40 —41
Old sheet	36 —37
Old cast	36 —37
Clean dry borings	37 —38

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	39	—40
Mixed L.C. clips	31	—32
Old sheets and cast	25	—26
Boring and turnings	22	—23
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	70	—71
No. 2 copper wire	59	—60
Light copper	56	—57
Radiators	44	—45
No. 1 composition	61	—62
No. 1 composition turn'gs	59	—60
Cocks and faucets	43	—44
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	44	—45
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

MATERIALS NEWSFRONT

(Effective May 11, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$106.00 to	$107.00
No. 2 hvy. melting	96.00 to	97.00
No. 1 dealer bundles	118.00 to	119.00
No. 1 factory bundles (auto)	121.00 to	122.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	119.00 to	120.00
Machine shop turn.	29.00 to	30.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	5400
Low phos. punchings plate	124.00 to	125.00
Heavy turnings	96.00 to	97.00
No. 1 RR hvy. melting	117.00 to	118.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	108.00 to	109.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	720.00 to	730.00
18-8 turnings	615.00 to	620.00

Chicago

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	109.00 to	110.00
No. 1 factory bundles (auto)	115.00 to	116.00
No. 2 dealer bundles	74.00 to	75.00
Unburned bundles	60.00 to	61.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	100.00 to	101.00
Machine shop turn.	49.00 to	50.00
Mixed bor. and turn.	50.00 to	51.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	74.00 to	75.00
Low phos. forge crop	123.00 to	124.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to	132.00
Low phos. 2 ft. and under	125.00 to	126.00
No.1 RR hvy. melting	102.00 to	103.00
Scrap rails, random lgth.	98.00 to	99.00
Reroller rails	125.00 to	126.00
Rails, 2 ft. and under	127.00 to	128.00
RR couplers and knuckles	124.00 to	125.00
RR car axles	169.00 to	170.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	114.00 to	115.00
Steel car wheels	122.00 to	123.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to	$ 86.00
No. 2 hvy. melting	72.00 to	75.00
No. 1 dealer bundles	105.00 to	108.00
No. 2 dealer bundles	56.00 to	59.00
No. 1 busheling	102.00 to	105.00
Shredder scrap	97.00 to	100.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	38.00 to	39.00
Shoveling turnings	58.00 to	59.00
Clean cast chemical borings	66.00 to	69.00
Low phos. [illegible] ft. and under	102.00 to	105.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	122.00 to	125.00
RR specialties	104.00 to	107.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	82.00 to	85.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	118.00 to	121.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	76.00 to	77.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	47.00 to	48.00
No. 1 busheling	95.00 to	96.00
Drop forge flashings	75.00 to	76.00
Machine shop turn.	44.00 to	45.00
Mixed borings and turn.	38.00 to	39.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	45.00 to	46.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	82.00 to	83.00
Automobile cast	113.00 to	114.00
Stainless		
18-8 bundles and solids	670.00 to	680.00
18-8 turnings	530.00 to	540.00
430 bundles and solids	155.00 to	165.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 dealer bundles	62.00 to	63.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	30.00 to	31.00
Low phos. plate	101.00 to	102.00
Electric furnace bundles	101.00 to	102.00
Galvanized bundles	88.00 to	89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to	$ 94.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	114.00 to	115.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	26.00 to	27.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	26.00 to	27.00
Cut structural & plates, 2 ft. and under	131.00 to	132.00
Low phos. punchings plate	131.00 to	132.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	97.00 to	98.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	71.00 to	72.00
Railroad cast	125.00 to	126.00
No. 1 machinery cast	125.00 to	126.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	575.00 to	585.00
18-8 turnings	450.00 to	475.00
430 bundles	125.00 to	135.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	26.00 to	27.00
Low phos. plate	100.00 to	101.00
Structural and plate, 2 ft. and under	108.00 to	109.00
Rails, 2 ft. and under	86.00 to	87.00
Scrap rails, random lgth.	66.00 to	67.00
No. 1 machinery cast	106.00 to	107.00
No. 1 cupola cast	74.00 to	75.00

St. Louis

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	80.00 to	81.00
Foundry steel, 2 ft.	80.00 to	81.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	75.00 to	76.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	91.00 to	92.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 91.00 to	$ 92.00
No. 2 heavy melting	84.00 to	85.00
No. 1 dealer bundles	92.00 to	93.00
No. 2 bundles	76.00 to	77.00
No. 1 busheling	94.00 to	95.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	36.00 to	37.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	44.00 to	45.00
Electric furnace bundles	94.00 to	95.00
Elec. furnace, 3 ft. & under	84.00 to	85.00
Structural and plate, 2 ft.	111.00 to	112.00
Structural and plate, 4 ft.	107.00 to	108.00
No. 1 RR hvy. melting	96.00 to	97.00
Scrap rails, random lgth.	96.00 to	97.00
Rails, 18 in. and under	115.00 to	116.00
Angles and splice bars	106.00 to	107.00
No. 1 cupola cast	104.00 to	105.00
Unstripped motor blocks	72.00 to	73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to	$ 76.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	88.00 to	89.00
No. 2 bundles	51.00 to	52.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	25.00 to	26.00
Low phos. 18 in. and under	115.00 to	116.00
Rails, random length	90.00 to	91.00
Rails, 2 ft. and under	112.00 to	113.00
No. 1 cupola cast	74.00 to	75.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 48.00 to	$ 49.00
No. 2 hvy. melting	43.00 to	44.00
No. 2 dealer bundles	40.00 to	42.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 67.00 to	$ 69.00
No. 2 hvy. melting	61.00 to	62.00
No. 1 dealer bundles	81.00 to	83.00
No. 2 bundles	36.00 to	38.00
No. 1 busheling	81.00 to	83.00
Shredder scrap	82.00 to	84.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	22.00 to	24.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	60.00 to	62.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 72.00 to	$ 74.00
No. 2 hvy. melting	62.00 to	64.00
No. 1 dealer bundles	57.00 to	59.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	57.00 to	59.00
No. 2 dealer bundles	40.00 to	42.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to	118.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 96.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	87.00
No. 2 bundles	72.00 to	74.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	88.00
No. 1 dealer bundles	90.00
No. 2 bundles	70.00
Mixed steel scrap	67.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	48.00
Short steel turn.	52.00
Mixed bor. and turn.	48.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$101.00 to	$102.00
No. 2 hvy. melting	93.00 to	94.00
No. 2 bundles	63.00 to	64.00
Machine shop turn.	20.00 to	21.00
Crushed turnings	44.00 to	45.00
Shredder scrap	101.00 to	102.00
Cut structural plate 2 ft. and under	118.00 to	119.00
Unstripped motor blocks	83.00 to	84.00
Cupola cast	99.00 to	100.00

JUNE

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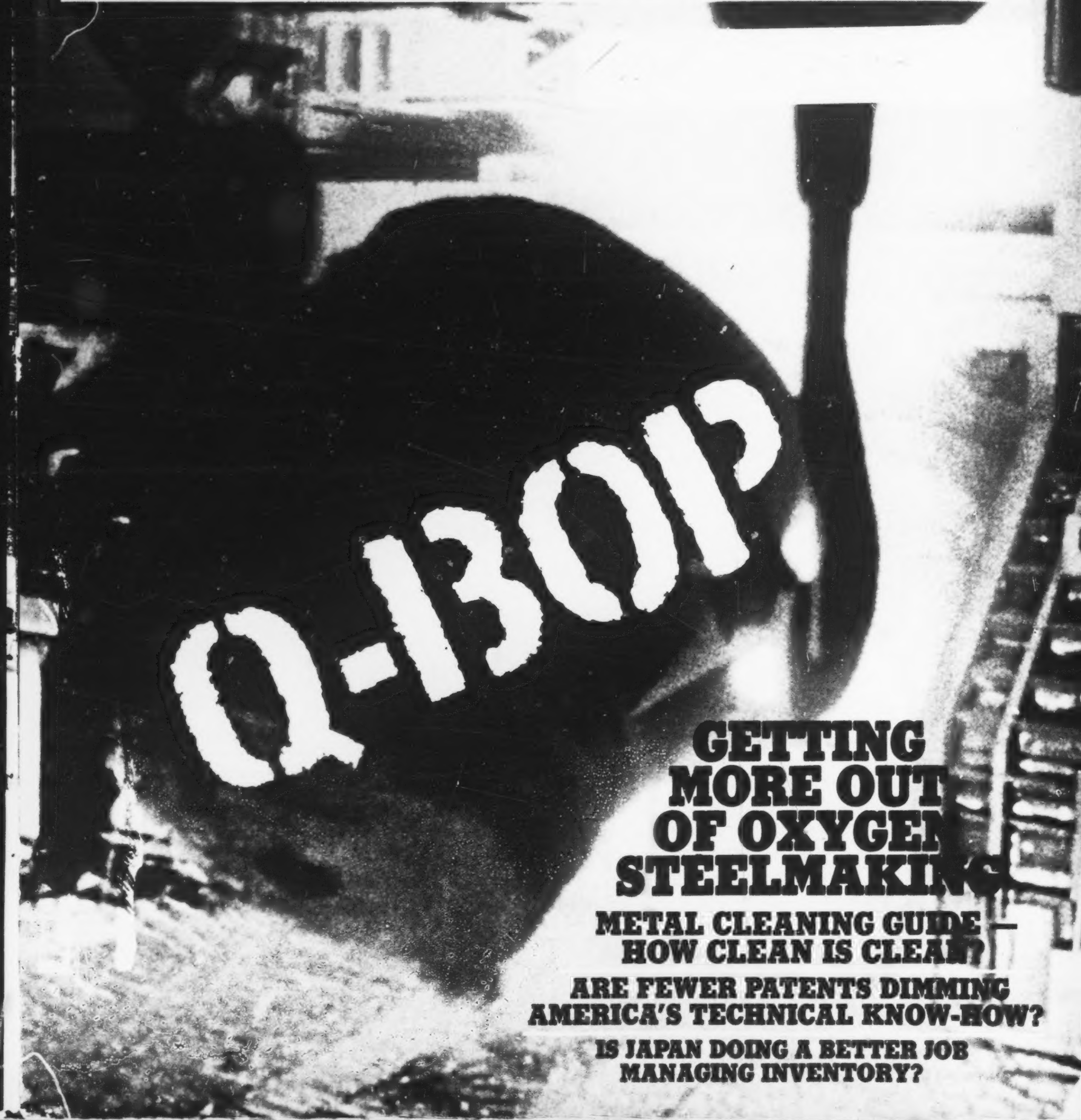
1981

Chilton's

JUNE 1, 1981

IRON AGE

SPECIAL METAL PRODUCING MANAGEMENT EDITION



GETTING MORE OUT OF OXYGEN STEELMAKING

METAL CLEANING GUIDE — HOW CLEAN IS CLEAN?

ARE FEWER PATENTS DIMMING AMERICA'S TECHNICAL KNOW-HOW?

IS JAPAN DOING A BETTER JOB MANAGING INVENTORY?

VOL. 224, NO. 16

IRON AGE

JUNE 1, 1981

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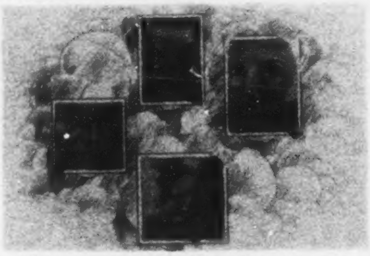


Management in America: Part II
Reaching out to the worker

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING NEWSFRONT

Don't delay capital spending, NMTBA urges

To the nation's peril businessmen are delaying needed capital investment pending Congressional approval of President Reagan's tax and economic plans, spokesmen for the machine tools industry assert.

Craig R. Smith, chairman of the National Machine Tool Builders' Association, told the Senate Finance Committee "high marginal tax rates have served to distort normal investment and have robbed the U.S. economy of the vitally needed equity investment and venture capital which has traditionally been the bedrock of America's economic growth." Mr. Smith is also president of the Warner and Swasey Co.

The Association came out strongly in favor of the 10-5-3 Capital Cost Recovery Act. Mr. Smith called the proposed legislation "the critical linchpin of America's reindustrialization policy." He said "its immediate enactment is imperative to this country's economic well-being, productivity and, ultimately, its military defense posture."

Mr. Smith's views were echoed elsewhere on Capitol Hill by several other machine tool industry executives. Ralph Cross, board chairman, Cross & Trecker Corp., told a House of Representatives banking subcommittee the U.S. has "failed" to increase productivity faster than total wages, a course of action absolutely vital to America's economic recovery. Increasing productivity faster than total wages is the way to bring prices under control, Mr. Cross said.

The C&T executive spoke to the subcommittee along with W. Paul Cooper, board chairman, Acme-Cleveland Corp.; Richard P. Bodine, president, Bodine Corp., Bridgeport, Conn.; and Charles P. Downer, of the NMTBA's industrial preparedness committee.

Mr. Cross pointed out for more than 25 years U.S. national growth in productivity has traveled hand-in-hand with investment. But now, he said, "the U.S. is dead last among industrialized nations in investment in new and more productive equipment as a percentage of Gross National Product."

Mr. Cooper laid out a program designed to revitalize the machine tool industry and the nation's economy. Among the proposals: Lower corporate income taxes and faster depreciation and investment tax credits. Those steps, the NMTBA said, would stimulate investment in new, more productive plants and equipment.

Also, Mr. Cooper said, there must be a national policy and programs to increase exports. Key elements of such a plan would include a strong Export-Import Bank, passage of Export Trading Company legislation and fair trade agreements with U.S. trading partners.

Machine Tools in Use In Seven Nations

Country	Pct of Total Under 10 years old	 Over 20 years old
United States	31	34
West Germany	37	26
United Kingdom	39	24
Japan	61	18
France	37	30
Italy	42	28
Canada	47	18

Source NMTBA

Mr. Bodine startled his listeners by revealing his company has intentionally withdrawn from any involvement in government business. "It is no longer economically practical for us to bid for or accept a government order," he said.

He continued: "As a private businessman I believe our decision to withdraw from any involvement in government business in the current regulatory and tax climate is sound. As a private citizen concerned with this nation's ability to remain militarily strong and at peace I decry the fact such a decision was necessary."

Mr. Bodine said his company was faced with an incredible burden of government regulations, some mandatory, others voluntary, but the "voluntary" ones became not so voluntary if he wanted to do government business.

The NMTBA proposals include a provision that U.S. industry be guaranteed it is not at a disadvantage with foreign competitors because of government regulation.

Mr. Smith stated the main theme of the industry's and President Reagan's economic proposals. He said: "We cannot over emphasize the critical need to balance tax cuts with budget cuts so as not to fan the flames of inflation or, in the alternative, potentially put the economy into a nosedive."

USS Fabrication goes into rig assembly

Taking its cue from competitors in the Southwest, USS Fabrication, a division of U. S. Steel Corp., says it plans to enter the rig assembly business late in 1981.

It also plans to diversify into two other areas—fabrication and assembly of oilfield drilling equipment, and fabrication of drilling barges, says Dennis Dawson, general manager at USS Fabrication's plant in Orange, Tex.

UAW says Chrysler was unique case

Ambitious retooling programs have pressed General Motors and Ford for cash, but the automakers can forget about cutting labor costs by renegotiating the present contract before it expires Sept. 30, 1982, says Douglas A. Fraser, president of the United Auto Workers (UAW).

Executives at the Big 2 have loudly wished for wage concessions similar to those given to Chrysler, but the UAW isn't interested. "We made the agreement at Chrysler because the economic facts demanded it," said Mr. Fraser. "The Loan Guarantee Board demanded it. The corporation would have been bankrupt. That's a totally different set of circumstances from Ford and GM."

Still, the UAW is hoping for concessions from the Big 2 similar to those made by Chrysler: worker participation in corporate decision making; full disclosure of corporate finances to the union; and agreements about the ratio of supervisors to workers.

"The workers are going to demand a voice in their own future and their own destiny through representation at all levels of management," said Mr. Fraser in a speech last month to the American Institute of Industrial Engineers at their Spring Annual Conference and World Productivity Congress. "They must have input before decisions are made rather than after."

Mr. Fraser predicted that the auto companies will follow Chrysler's lead in making full financial disclosure to unions. He added, "We're going to bargain about what's always been a sacred managerial prerogative, the ratio of supervisors to workers. It's unfair in a downturn for 25 pct of the blue-collar workers and only 5 to 6 pct of the white-collar workers to be laid off.

"Roger Smith [GM chairman] and

METALWORKING PRICE TRENDS

Are cooling prices a flash in the pan or a new trend?

Wave a flag—prices are softening in metalworking lines.

Come to think of it, make it a small flag. And . . . don't wave it too wildly.

After all, prices have been soaring for a long, long time. It will take some waiting and watching to see if recent price-softening signs signal a trend or just a blip in a roller-coaster economy. The U.S. economy over the past several quarters, has been one that flirted both with resurgent recession and dynamic recovery. It's loaded with tricks and surprises.

Another reason for caution in hailing recent price softening is the hard-to-swallow idea that it reflects a softening in business activity.

Too, as price gains slow, it becomes tougher for companies to make their own cost-pushed price hikes stick.

One metalworking machinery executive adds a wry note on slowing of price advances: "Aggressive pricing has become an almost singular corporate strategy at many companies. Once prices start slowing in their markets, these companies will have to make some tough adjustments."

Still, with inflation viewed as a retardant of real business growth, there is more good news than bad in recent signs of price easing. And, for sure, these signs firmed up in the most recent fully measured month—April.

In April, the average year-to-year price advance for the 23 key metalworking product lines shown on the table here came to 10 pct. That was down from an 11.4 pct average rise in March. Further, the March average was down from an 11.4 pct average metalworking price rise over the preceding three-month period.

And, of course, the Producer Price Index for all finished goods in April rose by only .8 pct compared to 1.3 pct in March.

Even capital goods prices seemed to have hit some kind of a ceiling. In April, prices of these goods rose by .9 pct over March. That matches exactly the average price advance covering the previous three months.

Lastly, it is worth noting that consumer prices have recently slowed in their advance rates. And the price measure for the overall U.S. economy—the GNP deflator—in the first quarter eased off to an annual rise rate of 7.8 pct, down from a 10.7 pct rate in the previous period.

Latest Month Covered: April, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	341.1	+ .8	+10.7
Metal Forming Machine Tools	375.0	+ .4	+10.2
Agricultural Machinery & Equip	281.2	+ .9	+10.5
Construction Machinery & Equip	314.7	+ 1.1	+10.7
Special Industry Mach. & Equip	303.8	+ 1.0	+11.7
Industrial Process Furnace & Ovens	328.2	+ 1.7	+12.5
Industrial Material Handling Equip	270.9	+ .6	+ 8.5
Pumps, Compressors & Allied Equip	315.9	+ .2	+11.4
Fluid Power Equip	216.4	+ .7	+10.0
Mechanical Power Transmission Equip	289.3	+ 1.5	+12.0
Automobiles	202.0	+ 1.8	+ 7.3
Motor Trucks—Light	246.5	+ 2.8	+14.9
Motor Trucks—Heavy	270.2	+ .5	+10.6
Railroad Equipment	341.8	+ 1.8	+10.3
Fabricated Metal Structural Products	293.5	+ 1.4	+ 9.1
Electric Motors	269.7	+ 1.4	+ 8.6
Valves & Fittings	307.8	+ 1.2	+ 6.8
Ball & Roller Bearings	293.3	NC	+13.8
Cutting Tools & Accessories	255.6	+ 2.9	+11.4
Heating Equipment	218.8	+ .6	+ 7.1
Plumbing Fixtures & Brass Fittings	265.2	+ 2.3	+ 8.8
Metal Containers	314.1	NC	+ 4.3
Miscellaneous Metal Products	268.1	+ .9	+ 8.9

Data based on U.S. Labor Dept.'s Producer Price Index

CAN MAGNESIUM DENT THE AUTO INDUSTRY?

Although Detroit likes the metal's light weight, it is reluctant to deal with an industry that is dominated by one large producer.

By Robert J. Regan

The magnesium industry has some important decisions to make over the next several years, not the least of which is the choice between continuing its present pattern of gradual growth and taking off in hot pursuit of the shrinking passenger car.

In either case, the producers will be sifting through options being created by technological advances in production methods, feedstock processing and fabricating. But the latter choice, which involves greater risk, will require large dollops of venture capital in every sense of the word.

In a nutshell, it would commit the industry to essentially one outlet—and to a race with some well established competitors, like aluminum, plastics and HSLA steels. The situation is not without a touch of irony. The automotive industry, which has been reluctant to design in too much of what it still regards as a single source material, would have to become the main outlet for the added capacity the magnesium industry has to promise to win a hearing.

Can it be done? A study of the magnesium industry's potential, delivered to the Department of Energy a few weeks ago by a Massachusetts Institute of Technology team, says yes. Prepared by Merton C. Flemings, George B. Kenney, Donald R. Sadoway, Joel P. Clark and Julian Szekely, it lays out a roadmap for moving magnesium into the automotive market in a big way.

While the magnesium producers are working to cut down their energy requirements, the MIT team says direct savings achievable through "realistically attainable process improvements" are small—an estimated 1.2 milliquads of energy per year. But, if magnesium penetrated the car market to an average of 50 lbs per vehicle, the saving would move up to 3.2 milliquads—and the savings in terms of gasoline requirements would be an estimated 325 milliquads. This, says, the MIT quintet, equals 62 million barrels of oil a year.

(These calculations assume a 100 million car population with magnesium replacing ferrous materials. Calculated against replacing aluminum, the figure drops to a still impressive 110 milliquads.)

Having set the bait, the MIT study turns to assessing the barriers to more widespread use of magnesium. The principal one, of course, is price. With primary magnesium at $1.25 a lb (since last September) and primary aluminum at 76¢ a lb (since last October) the 1.64 to 1 ratio is still a bit above the magic number of 1.5 to 1 (weight basis) widely regarded as a door opener for magnesium.

(The aluminum industry recently made a bid for a higher ingot price that could alter the ratio. Kaiser Aluminum & Chemical Corp. raised primary aluminum prices 4¢ a lb. If that new 80¢ a lb price holds, it will lower the magnesium-aluminum ratio to 1.56 to 1 from 1.64 to 1—unless and until the magnesium producers make their move.)

The aluminum producers have more fish to fry than the automotive castings market and have, in recent years, shifted strategy to maximizing return on investment. Nonetheless, they are deeply committed to winning as much of the automotive market as they can get. The MIT team suggests that the course for magnesium is to make future price increases in a manner that closes the gap. They note that, with the energy required to make aluminum (volumetrically) running 20 pct higher than magnesium, future energy costs could work in magnesium's favor.

"Other potential barriers to the use of magnesium, including corrosion and current lack of casting or machining facilities, are small in comparison to this price difference," the MIT team says.

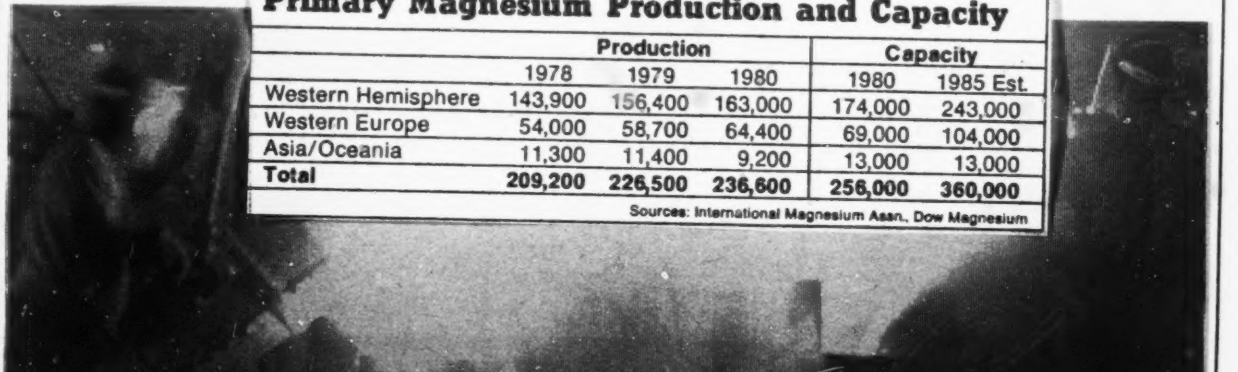
Detroit's "single source" syndrome

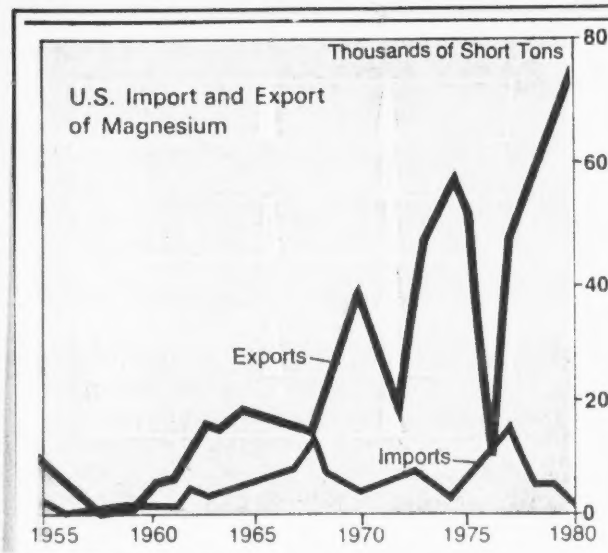
(Cont. on p. 37)

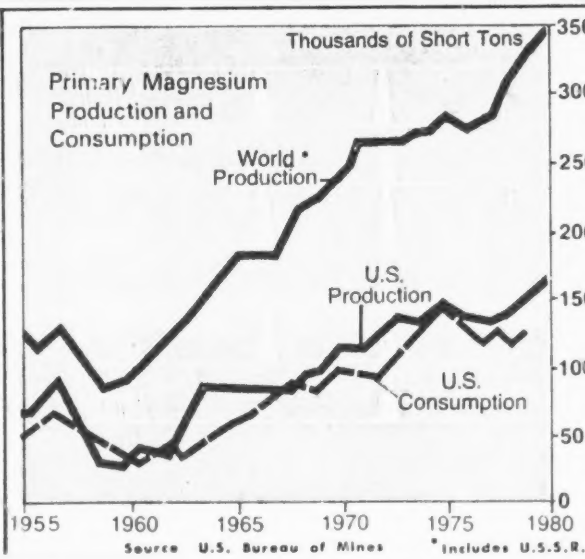
Primary Magnesium Production and Capacity

	Production			Capacity	
	1978	1979	1980	1980	1985 Est.
Western Hemisphere	143,900	156,400	163,000	174,000	243,000
Western Europe	54,000	58,700	64,400	69,000	104,000
Asia/Oceania	11,300	11,400	9,200	13,000	13,000
Total	**209,200**	**226,500**	**236,600**	**256,000**	**360,000**

Sources: International Magnesium Assn., Dow Magnesium







Source U.S. Bureau of Mines *Includes U.S.S.R.

(Cont. from p. 32)

is based in large part on Dow Magnesium's dominance of the industry. Technological difficulties in the '70s at the Rowley, Utah, plant (recently purchased by Amax, Inc., from NL Industries) didn't help matters.

American Magnesium's current problems also have not served to ease the auto industry's concern. Currently being reorganized under a Chapter 11 petition filed earlier this year, American Magnesium had to close its Snyder, Texas, facility after heavy rains diluted the concentrated brine harvest in the plant's solar ponds.

Amax, meanwhile, says it is determined to bring Rowley's present 28,000 tons a year capacity "not just to 45,000 tons (NL's original target), but to double or triple that size—whatever it takes to become the kind of supplier we want to be in the auto industry."

It's also a case of win one, lose one in Canada. Chromasco last year decided to delay planned expansion early in the 1980s because of "the current adverse climate for capital expenditures." But Cominco, Ltd., of Vancouver is well into a six-month feasibility study to determine whether it should produce magnesium as an adjunct to a planned ferrosilicon venture with Japanese interests. Cominco reportedly has some extra electrical capacity (about 50,000 MW) at a company-owned hydroelectric plant.

The way the MIT team sizes things up, there is a stalemate of sorts in the magnesium business today. Potential large scale entrants are reluctant to invest in magnesium capacity that would be solely dependent upon the automotive industry for a market.

"The hesitancy," they noted, "has been due in part to the presence of a dominant producer and to the uncertain nature of the automotive market for magnesium. The current producers share this hesitancy for another reason: An expanded automotive market would expose the total market for magnesium, which currently enjoys price stability, to the price instability of the competitive market for lightweight materials."

The MIT quintet said the price for magnesium relative to aluminum isn't likely to decline in the short term given the current structure and capacity of the U.S. magnesium industry "unless some external factor is added to the equation."

The external factor, they said, could be either "a technologically aggressive new competitor with adequate capital, or extensive Federal encouragement (Energy Department, take note) of research and development and investment in magnesium."

The MIT team said there is a potential for substantial improvements in production efficiencies through process innovations. These "could allow for significant reductions in the price of magnesium and, if these price reductions were passed on to users, magnesium could become fully competitive with other lightweight materials by the end of the decade."

The study determined that a new greenfield magnesium plant based on current technology would be economically viable in the current non-structural (alloys and desulphurization materials, for example) market. But it also determined that the profit margin from such a plant couldn't absorb the approximately 10 pct price reduction necessary for penetration into the automotive market.

The critical question remains: Is a 10 pct or greater improvement in production efficiency possible? The MIT team says it is in view of recent technological developments. It notes that Dow Magnesium currently is at the mid-point of a 10-year program to cut its Freeport, Texas, plant's energy requirements by 30 pct, which translates into a 10 pct reduction in production costs.

The MIT study says flatly that there is sufficient potential to improve the magnesium industry's efficiency by more than the 10 pct necessary to get magnesium off and running in the automotive market. But, if the invasion is to start soon, "a research and development effort will be required to demonstrate the commercial viability of one or more of the suggested technical innovations. Following this, the growth potential of the automotive market will provide the financial incentive for a firm or firms to commercialize this process."

Meanwhile, the current magnesium producers have a short term decision to make, now that Kaiser Aluminum & Chemical Corp. has started the ball rolling again on aluminum pricing.

Plainly, the aluminum producers haven't abandoned their pricing strategy of maximizing return on investment after years of price-conceding market development. The magnesium producers followed a return-maximizing strategy of their own in the late '70s and Detroit will be watching to see which way they go this time around. ☐

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IS JAPAN DOING A BETTER JOB MANAGING INVENTORY?

Equipment is not the only method which is successful in controlling inventories. In Japan it's the right attitude and efficient organization.

By Robert E. Harvey

A quantum jump in interest rates in recent years has caused manufacturers to reluctantly abandon America's most popular inventory act: the inspired guesser followed by the juggler (or scrambling quarterback).

The team has been dumped because firms no longer can afford to sink fabulous sums into extensive stagnant inventories. New acts, however, are being reviewed.

Two of the most popular include the material handling spectacular, complete with elaborate controls, lots of hardware and a hefty price tag; and the Japanese import, currently on tour from the Far East.

Both are playing to packed houses although investment in either is not without its pitfalls. Take the case of the company that runs out to buy a very sophisticated computer-controlled material handling system to keep inventories in that narrow groove between shortages and excess.

"I believe that the large majority of manufacturers that spend these big bucks are adequately prepared for the changes that occur when the new equipment is operational," explained Gordon G. Palmer, division president, Litton UHS. "However, there have been a number of companies that have made some terrible mistakes with large amounts of money buying these big storage and conveyor systems."

Adequate preparation, according to Mr. Palmer, means that besides working out specs, finding vendors, taking prices and offering purchase orders, the manufacturers must also "put together programs that describe to the worker just exactly how things are going to change. Because change really does happen: people's jobs change significantly—the way they go to get materials or expect materials to be brought to them changes. In fact, engineering, purchasing, manufacturing, shipping—the whole business process—is significantly altered when one of these very sophisticated systems is put into place."

Japanese vs American manufacturer: Who is better at juggling inventories?

These sleek new systems may include automatic storage and retrieval systems, a conveyor system for inbound traffic, an order selection system, conveyors distributing parts to work stations and even robots to load and unload parts at work stations. "It is a computer-based system that has a little bit of software that drives the machinery and an awful lot of software that has so-called administrative control," explained Mr. Palmer.

The companies that have the most trouble adjusting to these systems which prepare insufficient groundwork, who just try to wing it because, possibly, enamored with new technology, they feel the answer is in the *shiny* new equipment or system rather than a change in attitude or philosophy. They are often faddists looking for a quick fix.

"We found that damn few companies thought the new systems lived up to all their expectations," said Robert Fox, vice president, Booz, Allen & Hamilton Inc., management consultants. "However, a handful of companies have been extremely successful with the systems and they are successful probably for the same reason that the Japanese have been successful controlling inventories, not because they have the latest equipment but because they have fostered the right attitudes and established an efficient organization. The Japanese are good at managing change. Often U.S. companies are not.

One change the Japanese appear to handle better than their U.S. counterparts is the number of complete inventory turnovers during a year. According to some sources U.S. companies may average about four turnover while at Toyota, for example, turnovers reach above 60 a year.

Ray Harmon, a principal with Arthur Andersen & Co., worked with Yamaha for over three years, and helping them raise inventory turns from 18 to 36 a year.

According to several industry spokesmen these high turnover rates are somewhat misleading "like comparing apples to oranges" because of very different manufacturer/supplier relationships, for example. However, the experts agreed that by any yardstick Japanese figures have been impressive. Suffice it to say, the Japanese for the most part have been able to run on leaner inventories than the average U.S. firm.

The reasons for this superiority in inventory control are complex. Some of the reasons may be easily adopted by American manufacturers, some quite hard. The trick is to do what the Japanese have been doing to the U.S. for so long: listening, learning, keeping an open mind, and adapting what is valuable to the particular needs of the manufacturer.

Most often stressed is the relationship between Japanese suppliers and manufacturers. "The secret is working closely and developing a long term relationship with the suppliers," explained Mr. Harmon.

For example: If parts are arriving late, the Japanese manufacturer doesn't calculate that into his inventory plan but goes to the supplier and tries to work out any problems that are causing late deliveries. The manufacturer also keeps a close eye on suppliers quality control programs for poor quality means more rejects, more rework, and more inventory. The manufacturer tells his long-time supplier all his projected inventory plans, allowing the suppliers to carefully plan their own manufacturing and inventory cycles which in turn benefits the original manufacturer.

In addition, in Japan the suppliers are usually located quite close to the manufacturer. They usually have their own fleet of trucks, making delivery more reliable. As a result of this reliability, deliveries are made more often to Japanese plants. Toyota, for example, may get a parts delivery six times a day from a supplier. More deliveries of fewer parts means that plants need carry very little inventory. What comes in can be injected right on to the production line where needed.

To better coordinate these numerous deliveries, many Japanese firms have developed some type of materials requirement planning system (MRP).

Inventory Systems—How They Stack Up

Inventory control in Japan tends to start with:	**Inventory control in the U.S. tends to start with:**
Small incremental improvements evolving into large systems as needed.	The implementation of a large computer based system to effectively manage inventory.
The line worker, who initiates many ideas leading to improved inventory control.	Upper management does all the initiating.
An overall point of view, recognizing that inventory control is inseparable from quality control, productivity etc.	The isolation of the material handling problem or inventory control problem from other plant operations.
Personnel transfers across functional lines.	Little cross-fertilization of job functions.
Long-term stable relationships with suppliers.	Switching suppliers every so often to get the best price.
Operating closely with supplier. Looking for ways to make suppliers more effective.	Altering operations to accommodate supplier inefficiencies.
Frequent supplier deliveries.	Less frequent deliveries.
A long-term overview of policy.	Shorter term policies.
Feedback through the manufacturing system for just-in-time inventory which is ready when needed.	Accurate scheduling which determines what inventory should be used but results in stockpiling when 'what is' differs from 'what should be.'
Desire for lean warehouse and in-process inventory, minuscule safety stock. Computers often used to reach these goals.	Desire for automated and computerized inventory control to improve efficiency. However, safety stocks remain fairly large.

"The MRP system set up at Yamaha is different—better—than most used in the U.S.," said Mr. Harmon. "The schedule is a master plan which specifies daily deliveries whereas virtually all U.S. plants schedule deliveries on a weekly basis."

Once material arrives on the shop floor it doesn't sit around, but is immediately brought into the manufacturing process. Companies have adopted a "just-in-time" philosophy which means that nothing is stockpiled until just before it is needed. Providing this pinpoint manufacturing and inventory are a number of rather independent "shops" under one factory roof.

"Large plants even go to the extent of building walls around these shops so they can operate like a small manufacturing plant," explained Mr. Harmon. "In theory, a part from number one shop should arrive just in time for shop number two to make use of it. Of course, the Japanese don't really achieve right to the minute-line production. Toyota, for example, permits the shop manager to prepare a safety stock of parts (in terms of how many parts are needed in his stock area at a given point of time) to cover one hour. In the U.S. and Europe the equivalent amount of safety stock is more likely to be a week."

In-process inventory can run lean but two basic elements are needed. Workers must be heavily committed to the system and inventory control must be very carefully planned so that it is totally integrated with all other aspects of manufacturing and production.

"One reason that the integration can be so complete is because Japanese management has had in-plant training in various disciplines. "Controlling inventory is a balancing act involving a number of disciplines," explained Mr. Fox. "Here in the U.S. we tend to be functional specialists while in Japan they know all facets of the business." Manufacturing engineers in Japan, for example, are more involved with product design than their American counterparts. "Design engineers in Japan don't over-specify a part," said Mr. Fox. "They design the critical areas but leave much of the design to the manufacturing engineer, who can finish product design based on the plant's manufacturing capabilities. The Japanese use many more manufacturing engineers than design engineers which is opposite the way most U.S. plants do it.

"The Japanese don't seem to have turf problems that we have in the U.S.," said Mr. Palmer of Litton. "In the U.S. it is often 'I design, he engineers, you manufacture; don't bother me with manufacturing problems, they are not my job.' I have heard that Japanese employees, the engineers, purchasers, process planners, manufacturing planners, and the operators see themselves as a team of equals, which allows them to think through each others problems and not worry about doing someone else's work."

Working closely with other employees the Japanese worker has a good feel for the interconnectedness of the manufacturing operation. For example, quality products are closely related to tight in-process inventory control. Less rejects and less rework means that not only productivity is improved but less backup inventory is needed to cover the mistakes.

Much has already been said in the media about the Japanese quality circles (or more accurately productivity circles) but the fact is that many of the significant improvements in production, quality, and inventory control have originated from the worker on the production line rather than the designer or systems specialist.

The goal of high productivity is seen to be the result of all the little changes initiated by the employees as much as the initiation of sophisticated equipment or an elaborate system.

A strong worker commitment to productivity improvement causes quality to improve, production to go smoother and set-up time to decrease. Improvements in these areas result in the need for much less in-process inventory.

Contrary to belief in the U.S., the Japanese great leap forward in inventory management is not primarily the result of massive injections of automated handling equipment and robots (although Japan does have its goodly share of both). "To say that is to miss the point," said one official. Modern software is a contributing factor but not the heart of the Japanese system."

"From what I've seen, the Japanese have a truly different approach to inventory," said Mr. Palmer. "Even at some of the large companies I have dealt with, inventory control seems to be very manual. According to Mr. Palmer, there are slips of paper which are filled out by employees on the production line saying that they have, for example, just received some parts and should be finished with them in two hours so stations further up the production line should be thinking about getting them another batch of parts.

The Japanese have been able to run on leaner inventories than the average U.S. firm.

These cards (or kanbans) keep workers up and down a production line informed about what is actually happening rather than what should be happening or what quotas should be met. The cards are initiated by employees at the end of the assembly line. They list what and how many parts are needed at the moment. These needs are then passed up the line to those responsible to see that the needs are met. Operations are based on demand rather than a schedule, which permits very lean inventories and just-in-time service.

"The process is different than poking information into a keyboard, bringing it up on a CRT and letting the computer figure what to do next," outlined Mr. Palmer. "The Japanese tend to do very detailed process planning. They seem to feel that buffer zones or storage and retrieval systems, especially during work-in-process are not particularly useful. They make sure work stations receive precisely what is needed for a certain number of operations and then make sure the next precise amount is on its way." According to Mr. Palmer a number of companies do much of these operations manually.

The paradox seems to be that the U.S. companies have the large computerized inventories sitting around while the Japanese have less automation and very little inventory. The question is: with our computer capacity can we achieve some of the inventory turnover figures that have been reached by the Japanese?

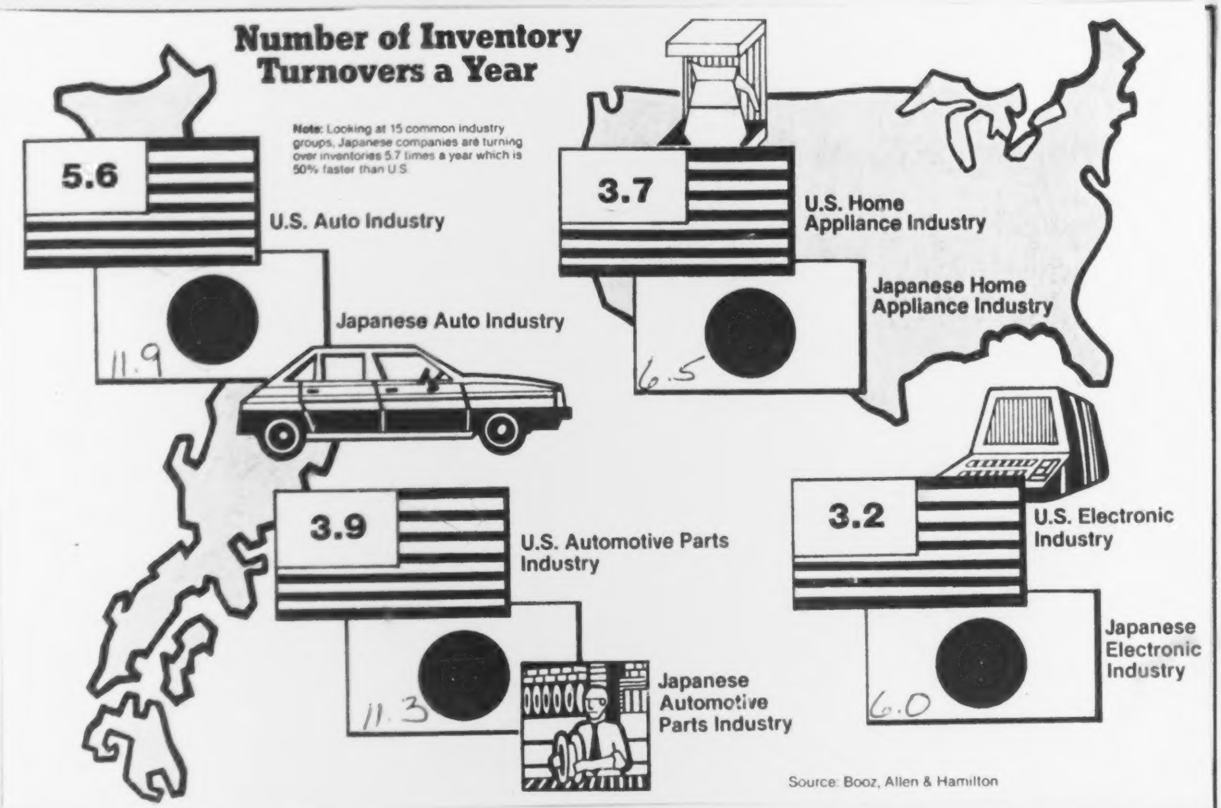
Mr. Palmer is optimistic. "I think that American manufacturers are eventually going to get the same result as the Japanese but are going to attack the problem differently. The Japanese do the most detailed and thorough job of process planning and therefore have a high degree of orderliness in getting materials in, getting materials bought, received, moved, and distributed to the right workers at the right time to do the right thing. In this country we have the potential for gaining a similar kind of orderliness by buying some of the material handling systems available today.

"My point is that when customers buy these extraordinarily sophisticated systems, they find that the systems demand a degree of orderliness that the company is not used to. It demands, for example, that for one time at least the manufacturer is forced to gather a very accurate inventory to feed into the computer."

According to Mr. Palmer, most firms don't really know what their inventory is, making it difficult to formulate any kind of accurate strategic plan for the future. Taking an accurate inventory is but one example of how the implementation of a new computer-based materials handling system in effect forces the manufacturer to become more aware of his operation. This increased knowledge leads to smoother production and lower inventories.

Other U.S. experts, however, see the gap between the two countries as more than an informational one. Some see Japanese attitudes as equally important in inventory control and are skeptical that the attitudes can be imported. The idea of innovation from the ground up has not found much acceptance in U.S. factories. Also the inventory systems set up by the Japanese are often the result of long-term planning that has taken a number of years to complete. U.S. companies like the idea of quicker payoffs so they usually don't put in the sustained effort needed to match the Japanese commitment.

One change, however, is that U.S. companies are beginning to see that inventory control is important and should be managed by a professional. Too often in the past, "U.S. managers had little understanding of the functions of inventory. It was something that could be done by an amateur with a little common sense," explained George Johnson, assistant professor, information management,



Number of Inventory Turnovers a Year

Note: Looking at 15 common industry groups, Japanese companies are turning over inventories 5.7 times a year which is 50% faster than U.S.

Source: Booz, Allen & Hamilton

University of Connecticut. "For the most part for the last twenty years inventory has operated under what euphemistically has been called the 'informal system' in which things get done primarily by gut feelings. Today, however, with increasing complexity in manufacturing, shorter product life cycles, and with the old experienced hands no longer operating the business, a formal integrated materials management system is needed."

The Japanese, however, do not have a monopoly on efficient inventory management systems. A significant number of U.S. plants have very efficient setups; however, when looked at across the board the Japanese appear to have made the greater commitment up to now.

The Japanese commitment to tight inventory shows up in their attention to detail.

Even items like parts containers have been studied closely so that inventory, even in-process inventory, is almost always matched to the right sized container.

"We do a terrible job in the U.S. with containers," said Mr. Harmon of Arthur Andersen. "Typically large manufacturers buy huge skid loads of parts whether that many parts is needed or not. The containers themselves lead to bad inventory practices."

The Japanese by contrast pay careful attention to defining for suppliers the container size they want.

The Japanese are also concerned about how things like long lead times and the standardization of parts affect inventory levels. Buying supplies with long times can hurt inventory levels by locking a firm into a commitment which is far down the road. Standardization of parts on the other hand, means less potential inventory problems.

With all their efforts, the Japanese are reportedly between 50 to 100 pct better at turning over inventory than their U.S. counterparts. However, U.S. companies are beginning their own moves toward inventory efficiency. They are beginning to see that as Mr. Fox pointed out, "Inventory control can be a much bigger cost driver than attempting to continually push the employee on the line to produce more." For in most factories a part stands idle 95 pct of the time and is worked on the remaining 5 pct. Companies are also finding out what the Japanese have also known for a number of years. And that is: "productivity is not improved by systems and not very often by equipment but by people, by changes in attitude," remarked Mr. Fox.

One attitude that needs to be fostered is the notion that inventory problems need long-term commitments and long-term solutions. A two-month crash inventory control program is not the answer.

"Often U.S. companies are interested in implementing (inventory control) programs—until business starts to boom or decline," said Mr. Harmon of Arthur Andersen.

"When business drops," he adds, "the program is scrapped because it has become too expensive to develop and when profits are good, officials rationalize that the program is not needed."

In contrast, many large Japanese firms are involved in multi-year programs to improve inventory management.

Another attitude worth nurturing is the idea that increasing productivity should go hand-in-hand with decreasing parts, in-process, and finished goods inventories.

Too often the opposite occurs. Automated equipment can explode inventories by turning out thousands of parts at a crack, parts which may sit around for days before the next operation is ready for them. ☐

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EFFECTIVE MAY 18, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	294	297	307	275
Buffalo	87	86	69	51
Pittsburgh	456	456	467	420
Youngstown	151	149	147	115
Cleveland	180	175	187	150
Detroit	174	178	178	153
Chicago	647	639	589	498
Cincinnati	103	95	115	116
St. Louis	100	98	101	82
Southern	261	264	272	279
Western	160	158	163	148
U.S. Production	2,613	2,595	2,595	2,287

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective May 18, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,613	2,595	49,426	47,483
Capability Utilization Rate	87.3	86.7	85.0	82.3
Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$96.17	$96.50	$102.50	$78.17
No. 2 bundles	$ 67.50	$ 68.83	$ 75.50	$ 53.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$105.50	$106.50	$111.50	$80.50
No. 1 steel, Philadelphia	84.50	84.50	91.50	83.50
No. 1 steel, Chicago	98.50	98.50	104.50	70.50
No. 1 bundles, Detroit	98.50	98.50	108.50	71.50
Low Phos., Youngstown	101.50	101.50	113.50	80.50
No. 1 mach'y cast., Pgh	104.50	104.50	104.50	92.50
No. 1 mach'y cast., Phila	119.50	119.50	121.50	120.50
No. 1 mach'y cast., Chi	129.50	129.50	129.50	122.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective May 18, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	72.00-76.00	10/13/80
Copper (C)	81.90-85.00	81.45-85.00	5/18/81
Lead	36.00-38.00	38.00	5/ 5/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) - cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$481.75
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$140
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$10.96
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

May 11—571.23
May 12—578.06
May 13—576.13
May 14—574.53
May 15—574.80

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80	71¼
Yellow brass	69⅝	64½
Red brass	74⅝	68⅛
Comm. bronze	76⅛	69⅛
Mang. bronze	68⅝	66⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	62
Light copper	53
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	32
Radiators	54

Aluminum

New mixed clips	38	—39
Old sheet	35	—36
Old cast	35	—36
Clean dry borings	36	—37

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	39	—40
Mixed L.C. clips	31	—32
Old sheets and cast	25	—26
Boring and turnings	22	—23
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	70	—71
No. 2 copper wire	59	—60
Light copper	56	—57
Radiators	44	—45
No. 1 composition	61	—62
No. 1 composition turn'gs	59	—60
Cocks and faucets	43	—44
Clean heavy yellow brass	38	—39
Brass pipe	43	—44
New soft brass clippings	52	—53
Yellow brass rod ends	44	—45

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	175	—190
Nickel rod ends	175	—190
Nickel sheets, clips	175	—190
Nickel turnings	130	—135

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAY 18, 1981

MATERIALS NEWSFRONT

(Effective May 18, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to	$106.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	118.00 to	119.00
No. 1 factory bundles (auto)	121.00 to	122.00
No. 2 bundles	70.00 to	71.00
No. 1 busheling	118.00 to	119.00
Machine shop turn.	29.00 to	30.00
Shoveling turnings	54.00 to	55.00
Cast iron borings	53.00 to	5400
Low phos. punchings plate	123.00 to	124.00
Heavy turnings	90.00 to	91.00
No. 1 RR hvy. melting	117.00 to	118.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	108.00 to	109.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	104.00 to	105.00
Cupola cast	97.00 to	98.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	720.00 to	730.00
18-8 turnings	615.00 to	620.00

Chicago

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	95.00 to	96.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 dealer bundles	79.00 to	80.00
Unburned bundles	64.00 to	65.00
No. 1 busheling	106.00 to	107.00
Shredder scrap	105.00 to	106.00
Machine shop turn.	51.00 to	52.00
Mixed bor. and turn.	53.00 to	54.00
Shoveling turnings	55.00 to	56.00
Cast iron borings	74.00 to	75.00
Low phos. forge crop	125.00 to	126.00
Low. phos. punchings plate ¼ in. and heavier	133.00 to	134.00
Low phos. 2 ft. and under	127.00 to	128.00
No.1 RR hvy. melting	105.00 to	106.00
Scrap rails, random lgth.	103.00 to	104.00
Reroller rails	129.00 to	130.00
Rails, 2 ft. and under	131.00 to	132.00
RR couplers and knuckles	126.00 to	127.00
RR car axles	174.00 to	175.00
No. 1 machinery cast	127.00 to	128.00
Cupola cast	119.00 to	120.00
Stove plate	114.00 to	115.00
Steel car wheels	126.00 to	127.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	550.00 to	560.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to	$ 86.00
No. 2 hvy. melting	72.00 to	75.00
No. 1 dealer bundles	105.00 to	108.00
No. 2 dealer bundles	56.00 to	59.00
No. 1 busheling	102.00 to	105.00
Shredder scrap	97.00 to	100.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	102.00 to	105.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	122.00 to	125.00
RR specialties	104.00 to	107.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	81.00 to	84.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	118.00 to	121.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 85.00 to	$ 86.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	108.00 to	109.00
No. 2 bundles	53.00 to	54.00
No. 1 busheling	105.00 to	106.00
Drop forge flashings	83.00 to	84.00
Machine shop turn.	46.00 to	47.00
Mixed borings and turn.	43.00 to	44.00
Shoveling turnings	48.00 to	49.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	84.00 to	85.00
Automobile cast	115.00 to	116.00
Stainless		
18-8 bundles and solids	680.00 to	690.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	165.00 to	175.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 dealer bundles	62.00 to	63.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	38.00 to	39.00
Low phos. plate	101.00 to	102.00
Electric furnace bundles	101.00 to	102.00
Galvanized bundles	88.00 to	89.00

Cleveland

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	109.00 to	110.00
No. 1 factory bundles	118.00 to	119.00
No. 2 bundles	50.00 to	51.00
No. 1 busheling	105.00 to	106.00
Machine shop turn.	27.00 to	28.00
Mixed bor. and turn.	27.00 to	28.00
Shoveling turnings	31.00 to	32.00
Cast iron borings	27.00 to	28.00
Cut structural & plates, 2 ft. and under	135.00 to	136.00
Low phos. punchings plate	135.00 to	136.00
Drop forge flashings	69.00 to	70.00
Foundry steel, 2 ft. & under	105.00 to	106.00
No. 1 RR hvy. melting	120.00 to	121.00
Rails, 2 ft. and under	140.00 to	141.00
Rails, 18 in. and under	141.00 to	142.00
Steel axle turnings	81.00 to	82.00
Railroad cast	135.00 to	136.00
No. 1 machinery cast	135.00 to	136.00
Cupola cast	115.00 to	116.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	600.00 to	610.00
18-8 turnings	475.00 to	500.00
430 bundles	150.00 to	160.00

Buffalo

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 busheling	79.00 to	80.00
No. 1 dealer bundles	77.00 to	78.00
No. 2 dealer bundles	49.00 to	50.00
Machine shop turn.	17.00 to	18.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	26.00 to	27.00
Low phos. plate	105.00 to	106.00
Structural and plate, 2 ft. and under	113.00 to	114.00
Rails, 2 ft. and under	91.00 to	92.00
Scrap rails, random lgth.	71.00 to	72.00
No. 1 machinery cast	111.00 to	112.00
No. 1 cupola cast	79.00 to	80.00

St. Louis

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	86.00 to	87.00
Foundry steel, 2 ft.	86.00 to	87.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	81.00 to	82.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	98.00 to	99.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 94.00 to	$ 95.00
No. 2 heavy melting	84.00 to	85.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	72.00 to	73.00
No. 1 busheling	94.00 to	95.00
Shredder scrap	104.00 to	105.00
Machine shop turn.	36.00 to	37.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	44.00 to	45.00
Electric furnace bundles	94.00 to	95.00
Elec. furnace, 3 ft. & under	84.00 to	85.00
Structural and plate, 2 ft.	111.00 to	112.00
Structural and plate, 4 ft.	106.00 to	107.00
No. 1 RR hvy. melting	96.00 to	97.00
Scrap rails, random lgth.	96.00 to	97.00
Rails, 18 in. and under	114.00 to	115.00
Angles and splice bars	106.00 to	107.00
No. 1 cupola cast	104.00 to	105.00
Unstripped motor blocks	72.00 to	73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 80.00 to	$ 81.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	56.00 to	57.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	120.00 to	121.00
Rails, random length	95.00 to	96.00
Rails, 2 ft. and under	117.00 to	118.00
No. 1 cupola cast	79.00 to	80.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	104.00 to	105.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 50.00 to	$ 51.00
No. 2 hvy. melting	45.00 to	46.00
No. 2 dealer bundles	40.00 to	42.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	63.00 to	65.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	660.00 to	680.00
18-8 turnings	560.00 to	580.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 65.00 to	$ 67.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	79.00 to	81.00
No. 2 bundles	32.00 to	34.00
No. 1 busheling	74.00 to	76.00
Shredder scrap	80.00 to	82.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	22.00 to	24.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	66.00 to	68.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 68.00 to	$ 70.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	40.00 to	42.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 66.00 to	$ 68.00
No. 2 hvy. melting	56.00 to	58.00
No. 1 dealer bundles	53.00 to	55.00
No. 2 dealer bundles	36.00 to	38.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to	118.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 96.00 to	$ 98.00
No. 2 hvy. melting	85.00 to	87.00
No. 2 bundles	72.00 to	74.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$107.00 to	$108.00
No. 2 hvy. melting	99.00 to	100.00
No. 2 bundles	63.00 to	64.00
Machine shop turn.	26.00 to	27.00
Crushed turnings	50.00 to	51.00
Shredder scrap	107.00 to	108.00
Cut structural plate 2 ft. and under	124.00 to	125.00
Unstripped motor blocks	89.00 to	90.00
Cupola cast	106.00 to	107.00

STEEL PRICES

Codes identify Producers listed in the Key on page 71. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$346.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$400.00
W8	$400.00
S1	$400.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$400.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$436.00
S1, U1	$436.00
R3	$436.00
West	
B3	$451.00
C6	$446.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	21.10
U1	20.40
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	22.15
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	22.15
C6	21.90
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
A7	18.45
D1	19.50
S1, J3, D1	19.50
W3	19.50
N4	17.50
W5	19.50
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	19.50
West	
K1	20.00
B3	23.55
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	29.75
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	19.50
A7	19.50
S1	19.50
I3	19.50
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	29.75
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	21.70
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
J3	Cmp*
Midwest	
I4	41.75
U1	41.75
S1	37.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	19.50
S1, W5, D1	19.50
J3	19.50
I4	19.50
West	
U1	20.00
K1	20.00
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	23.15
G2, W3, M11	23.15
I4	22.00
J3, A7	23.15
S1, W5, D1	23.15
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	25.25
Midwest	
J3, D1	25.25
I3, W5, S1	25.25
U1, A7, R3, Y1	25.25
G2, W3, M11	25.25
West	
K1	25.75
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	25.00
Long-Terne, Midwest	
W5	35.85
A7, U1	25.85
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	20.85
J3	20.85
West	
C6	20.85
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	**per base box**
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	16.17
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	23.30
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	29.70
C2	23.025
M9, W10, T11, S8	29.50
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5(2), W10, L2, Y1, W8, R3	29.20
C2	24.675
B1	19.80
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	29.75
West	
B6	33.40
B6	30.45
R3	30.45-33.40
South	
B5	31.35
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	25.35
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	33.45
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.45
T11, S8	33.20
C10	30.60
Midwest	
B5(2), R3, C10	32.90
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	32.90
B5	33.45
West	
R3	34.55-36.60
B6	33.55
B6	36.60
South	
S16	28.075
C16	28.00

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	23.25
Midwest	
A7, B3, G3, R3, G2, S1	23.25
I3, U1, W8, I4, W5	23.25
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	21.75
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	24.20
K2	24.20
South	
U1	25.65
A8	22.85
West	
C6	23.20

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co.,Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C
G8	Guterl Special Steel Corp
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta	25.88	29.98	34.34	31.29	28.52	30.72	21.67	42.83	48.52	55.65	60.00	77.83
Baltimore	29.78	33.76	39.68	42.49	35.21	36.27	28.98	46.88	53.53	58.44	68.16	73.61
Birmingham	25.41	29.02	33.28	32.97	28.19	30.40	21.15	42.70	40.00	54.48	53.70	77.77
Boston	29.24	33.62	36.29	40.70	36.28	33.75	25.35	42.08	54.19	59.84	66.36	73.05
Buffalo	29.36	32.47	37.64	38.35	35.42	30.97	22.81	43.50	53.31	55.82	61.87	70.00
Chicago	24.10	29.25	31.86	31.97	27.57	28.70	19.30	37.71	44.02	50.32	55.57	61.53
Cincinnati	25.30	27.88	32.03	31.69	29.92	28.79	18.81	39.57	43.90	50.19	55.49	61.95
Cleveland	26.96	33.06	37.11	33.03	27.93	30.60	20.71	43.26	47.91	53.23	60.60	67.02
Denver	31.64	36.16	38.62	41.39	35.46	34.49	24.80	47.10	54.89	61.41	69.46	72.22
Detroit	24.11	29.27	31.89	30.78	27.72	28.85	19.12	39.67	43.82	50.15	55.16	61.76
Houston	23.87	29.29	34.93	37.46	33.77	30.01	26.12	48.06	55.94	62.82	69.48	76.62
Kansas City	27.40	31.47	34.25	32.63	30.99	28.97	24.37	42.69	49.43	55.28	61.98	68.39
Los Angeles	30.65	35.81	38.33	45.03	38.09	37.60	34.95	49.17	62.79	69.26	76.82	84.03
Memphis	27.89	28.31	34.87	34.52	30.12	31.14	24.90	43.28	51.28	55.82	64.65	78.97
Milwaukee	23.65	28.99	32.03	31.39	29.02	28.41	18.61	39.19	43.52	49.80	54.98	61.20
New York	28.45	30.08	34.34	44.36	30.29	28.69	24.29	48.01	53.93	59.20	68.62	74.73
Philadelphia	28.37	34.47	40.07	42.72	32.62	34.17	26.11	47.37	53.52	57.69	69.38	75.24
Pittsburgh	29.86	34.95	39.24	38.61	31.90	34.34	29.09	43.63	49.79	56.40	62.38	71.69
Portland	30.19	32.54	38.29	37.61	31.59	34.35	31.86	53.54	60.36	63.70	58.00	....
San Francisco	36.10	35.64	38.24	45.60	38.92	37.52	36.37	54.35	62.76	69.28	76.27	83.73
Seattle	29.72	27.21	37.91	39.29	32.08	33.99	36.84	50.23	62.61	68.14	72.06	84.11
Spokane	21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis	24.24	29.88	31.93	32.33	27.15	29.12	20.58	39.90	43.69	49.53	55.93	62.28
St. Paul	25.26	27.70	24.00	31.64	30.57	28.03	18.75	40.87	43.63	49.89	56.46	62.58

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛'' x 1''; Plate ¼'' x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2 15/16; Cold finished bar—C 1018—1'' rounds; Alloy bar—Hot-rolled 8620—1⅝'' round; Cold drawn—1'' round; Hot-rolled 4140—1⅝'' round. Cold drawn—1'' round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

NOTE

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JUNE

10

1981

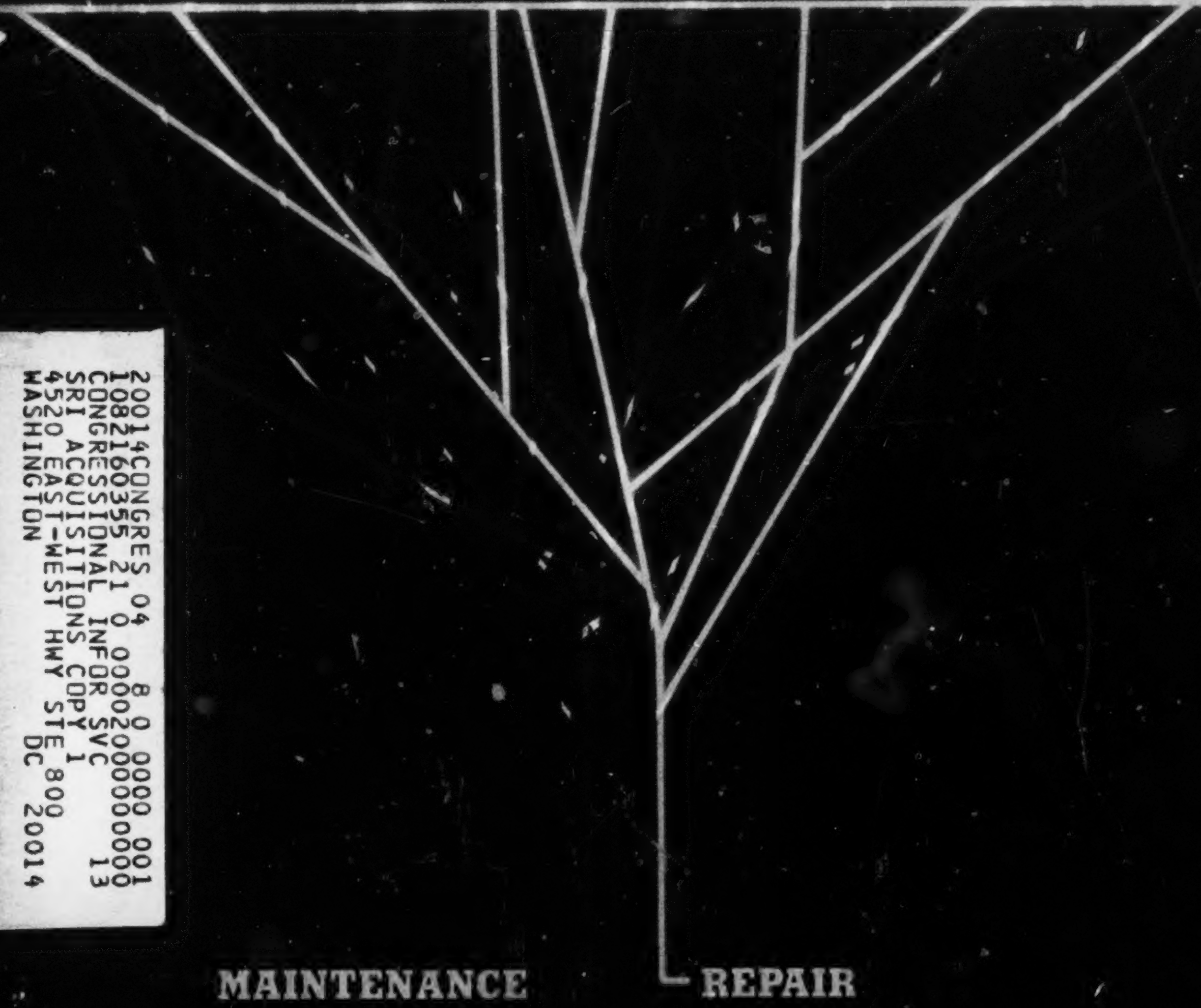
MANAGEMENT IN AMERICA: RESHAPING THE VISION

PART II: REACHING OUT TO THE WORKER

JUNE 10, 1981

6/10/81 C 2150-2

MANAGING THE COSTS OF OPERATION



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MAINTENANCE **REPAIR**

INVENTORY **AUTOMATION**

WORK-IN-PROCESS

IRON AGE

VOL. 224, NO. 17

JUNE 10, 1981

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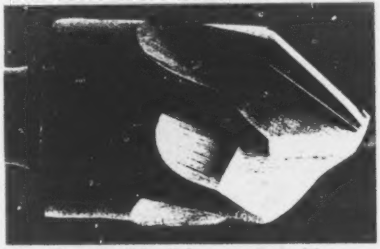


Machine tool builders cope with changing materials technologies.

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

PRECISION MACHINING IN THE MIDST OF A SLUMP

Industry could bounce back in 1982 with a 20 pct gain.

By Keith W. Bennett

This year is not billed as a winner for the multi-billion contract machining industry. The 12,500 precision metalcutting companies that make tools dies, molds, special machines and precision parts; could lose as much as 14 pct in real dollar sales volume.

In fact, recently the National Tooling & Machining Association reported that it has now revised its forecast for 1981 to a 7 pct decline, rather than a previously forecast 5 pct decline in shipments. The measurement was made against 1980 shipments. General precision machining is now expected to drop 10 pct, and special machine building will go off only 3 pct.

That's a problem. A tougher one is that almost everybody in this industry knows they have to scrape up cash to keep much of the skilled workforce as possible on the job. A company must also raise capital to get more late model machine tools and computers to meet a machining market that may bounce back 20 pct in 1982. A tougher problem is to come: To find workers to meet rising business volume in 1982.

"Right now, it's easy to get people," said Warren Martin, president of Circle Tool & Mfg., Des Plaines, Ill. "But if we get a turnaround this year, it's going to be very difficult to get people again."

One industry observer described the manning problem for contract precision shops as "a 30-year shortage." When the downturn began to spread rapidly in the second half of 1980, some machining shops had to lay off for the first time in years. That can't continue.

There's another problem, that's been developing along with this, and explains at least partly why there's been a surprisingly strong new tool investment by contract machining companies even in the slowdown of latter 1980.

"Some companies are still working with World War II machine tools in their contract shops. But the problem, besides the age of the machines, is that you can't find workers to operate these old tools any longer. Most of those people are retiring;" added James Boyd, vice president of Circle and presently President of the Tool & Die Institute of Chicago, largest local tool, die and precision machining group in the U.S. with 1284 member companies, based in the Chicago area.

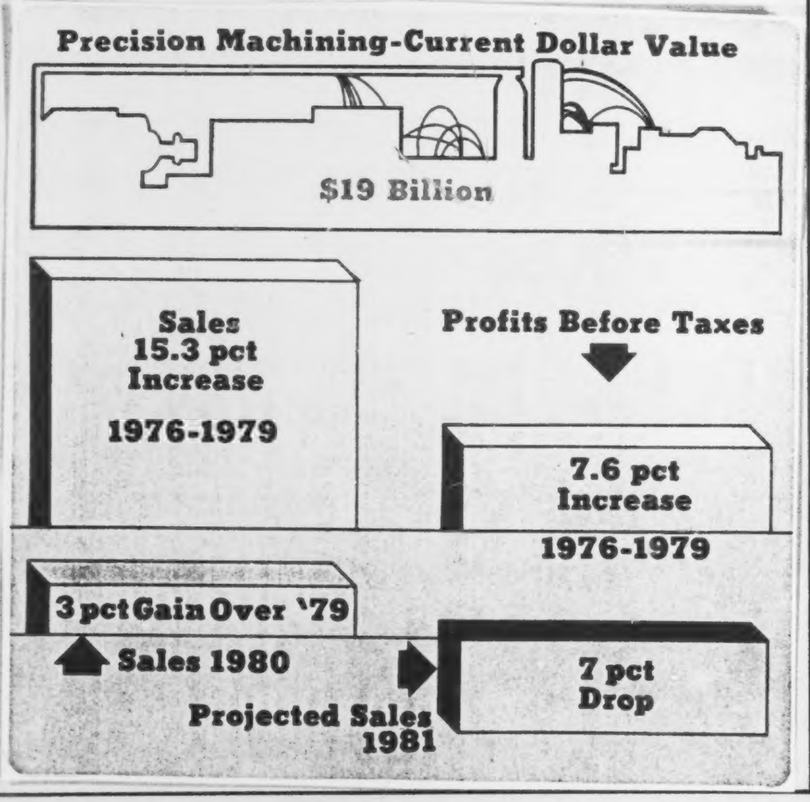
It's notable that, despite all that's been said about the decline of small companies in the U.S., Chicago's Tool & Die Institute membership was 980 at the beginning of the 1970's, and is now at 1384, or a 31 pct membership gain in that period. A growing industry needs more skilled workers, more machine tools.

D. N. Smith, director of the Industrial Development division, University of Michigan, prepares industry forecasts for members of the 3500 members of the National Tooling and Machining Association, Washington, D.C. He agrees that the industry is growing both in size and complexity.

"Partly, the growth is because more kinds of precision machining companies come into the (trade) organizations. As more automatic equipment goes into shops, the companies widen their markets to justify the cost of the machine. To justify use of these higher cost machine tools, more of these companies are going into building of special machinery themselves, like packaging machines, or fabricating machines; though they don't build machine tools as such."

He puts part of this spurt of growth at the end of the 1970's, to the heavy loads in backlogs at special machinery builders. These backlogs sent more and more special machine jobs to former tool and die and special ma-

(Cont. on p. 55)



(Cont. from p. 51)

chinery shops.

This process hasn't stopped, Mr. Smith suggests. Which means that the contract machining shops must get ready for much stronger volume in 1982, he believes, and for at least a couple of years beyond. "The impact of the auto switchover (to front wheel drive cars and other new changes) will not wind down till late in 1983 or 1984," Mr. Smith believes.

The new gains will come from a pretty good base, despite the slowdown in latter 1980. "The real growth for the tool and die and precision machining companies was about 9 pct to 13 pct per year for the three years ending in 1980. And there are three more good years still to come from the auto industry buyers."

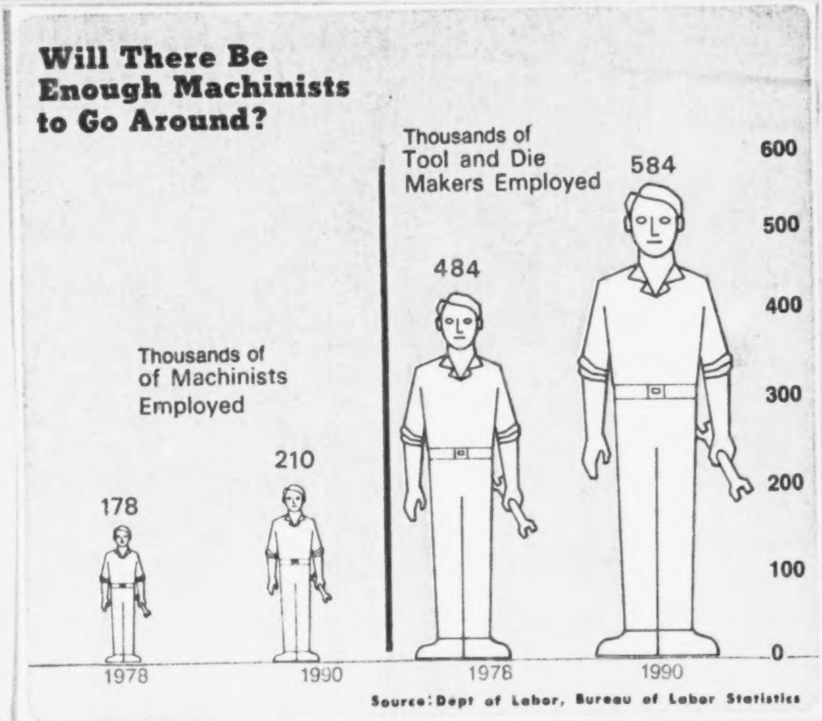
Besides he argues, precision machining companies still aren't exploiting their full market potential, even if they've complained about some business loss in latter 1980 and in first half 1981.

"The machining companies should expand their exports," Mr. Smith suggests. "The Mexican market has been called 'fantastic.' Industry plant managers still don't seem to realize, in many cases, their manufacturing cost can compete with European cost—as in Sweden, West Germany, Switzerland, and Belgium. In France, Netherlands and Italy, we're at least close. Given our productivity gains, and our shops offer better buys than all those countries."

Some jobbing shops would argue the point. But others agree that they can, and have, found export markets for at least some of their output. Besides this, the import competition of 1978 and 1979, seems to have dropped off in many machined products.

"Two years ago, we saw a lot of competing tool and die imports," said president Jerry Weaver, of Dixie Tool & Die, Inc., Gadsden, Ala. "But not now. I think the smaller companies in the U.S. must, however, work to standards that are suitable for export. We could export more, but this industry has to adapt to European market specs." He cautions, however, "Tool and die imports are down, but some precision machined parts are coming in."

Dixie Tool & Die, Inc., is part of a two-plant complex formed in 1962. It's done well, especially in serving the computer industry. Despite the problems in some industry areas, Dixie Tool hit a new high in 1980, and expects to gain in 1981—possibly by 20 pct.



Will There Be Enough Machinists to Go Around?

Source: Dept of Labor, Bureau of Labor Statistics

Pinned between a modest supply of skilled manpower, and rising cost, there is little choice but to go to more sophisticated machine tools. "We added more N/C tools with automatic toolchangers. Last year put in our own computer for programming. We added two Bridgeport Machining Centers last year and a Cincinnati Milacron boring mill. Now, we're looking at a $2 million (new tool investment) over the next two years," Mr. Weaver adds. He agrees with D. N. Smith, in saying, "I'm strong on the next four years, and we must prepare for the growth coming in that period."

Two million dollars in new tools for a pair of plants with 150 employees is impressive, but it's not that uncommon.

Circle Tool & Mfg., has a $400,000 Giddings & Lewis machining center it took last year, points out president Warren Martin; and has another on order for delivery early next year. Circle averages about 30 employees so fits a classic small business definition. But it already has three CNC machining centers and a CNC boring mill.

Atols Mold & Tool, Franklin Park, Ill., is somewhat larger (135 workers) but added six CNC machine tools at a cost of about a half-million dollars two years ago, and is now in a $400,000 program that will bring in a 5-in. CNC boring mill.

"Said executive vice president James Atols, "We could use the new machine and we're also looking at our longer range needs. And for the wider markets we see coming, you need late model tools."

Atols was a pioneer in the use of the computer in a job shop. Now, it has two computers. One, a PDP8 is for inspection and tape-making. An IBM 34 is used for office work, but will now take on work that had been put out to time-sharing computer services.

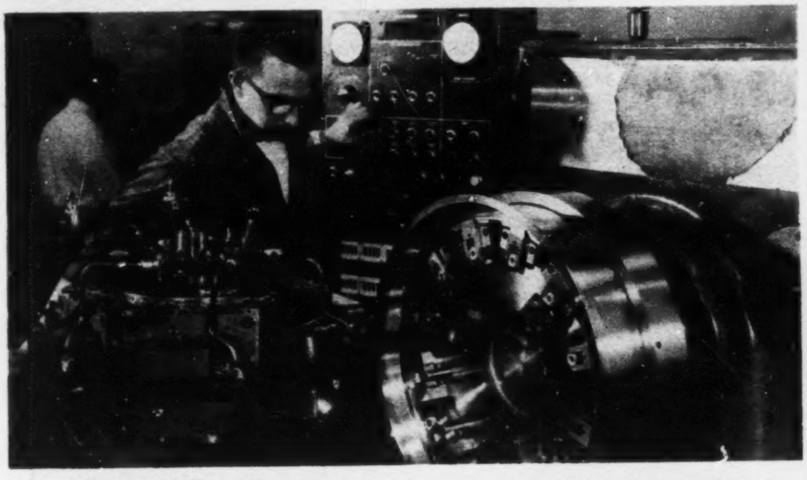
Prikos & Becker Tool Co., in the north Chicago metropolitan area, foresees a slight downturn coming in the second quarter of 1981. But after that, an upturn starting that could be a strong one if the interest rates ease off.

It doesn't see 1981 as a great recovery year, but compares it with a 1980 that wasn't all that bad. "I'd say 1980 was '8' on a scale of '10'," says Paul Prikos, vice president of sales for Prikos & Becker.

Despite its dim forecast for second quarter, this company is completing a 19000 sq. ft. plant addition for July occupancy. This follows a large expansion two years ago, when it completed a wire EDM installation, and added three DoAll milling machines and a radial drill press.

But this 50 worker operation also has been expanding its computer base. To an IBM 32, it added a Hewlett-Packard and an IBM 34. "We can get faster quotes, and faster cost analysis," Mr. Prikos points out.

President Hans Friedman of Skill



Precision machining companies are adding more numerical control capability to keep their operation at maximum productivity.

Tool & Die Corp., Cleveland, agrees that a pickup in tool and die is about six months away. Skill Tool is in the Midwestern belt that was hard hit by the 1980 recession and the company has about 40 persons, against a normal 65. Skill is in tool and die work, and contract stamping. Despite the slowdown, it brought in a 400 ton press in November. "Things have to get better and this looked like a good buy," says president Friedman.

But he's typical of much of the industry. These companies had to make some layoffs last year, yet know that labor supply will be short in 1982.

G. G. Hahnemann, H&R Tool Works, Inc., at Buffalo, N.Y., confirms this problem in his market; and like a number of plants had also to shelve some new equipment buying plans. This is a 15,000 sq. ft., 30 worker company that had done quite a bit of auto work. He agrees that, judging by the new tooling designs he's seeing, there should be a pickup beginning in second half.

Weldun International is a big machining complex, by contract machining standards. It has four plants with 425 workers, all in Western Michigan, where the recession has hit. Merlin Hanson, president, says the blow really came in September of last year when some machining prices fell 30 pct. Though January and February haven't shown much more than the last months of 1980, he shares a majority opinion that July could see the beginning of a turn.

Weldun put about $1 million into new tools space last year, despite the growing market softness. "We added a Burgmaster CNC vertical turning center, a Burgmaster CNC horizontal machining center, and a G&L horizontal machining center," says Mr. Hanson. "We also added 30,000 sq. ft to give us a 124,000 sq. ft total."

Thomas De Pinto, executive vice president of the Tool & Die Institute, Chicago, warns: "The recession should not lull precision machining companies into believing that the 30 year shortage of skilled labor that has plagued this industry, has ended."

"In a year from now," he continues, "We could be in more trouble in trying to get enough workforce to operate at capacity."

The contract industries, like tooling and precision machining, diecasting, stamping, screw machine products; at least 16 of these jobber, small company oriented, industries got together last year to tackle this problem. Their efforts have lost some of their impact because of the business slowdown and worker layoffs that followed.

But with a $30 billion pickup in Defense contracts alone expected to begin to affect 1982 markets, a skilled machinist shortage seems sure.

Bruce Hahn, of the National Tooling & Machining Association, estimated the worker gap lacks 60,000 persons of the number needed to get the output needed in a recovered economy. It was less than a year ago that Stephen Fogler, president of Stevens Mfg. Co., Inc., Milford, Conn. warned that his company was operating at only 50 pct of real capacity because of labor shortages. It was having to turn away work for lack of skilled help. It was employing only 15 persons at the time. Interestingly, these men were talking to a Congressional group about Defense work. You can't apparently, solve a worker shortage just by putting military priority on the job.

The upturn for 1982, in which increased Defense work will be joined by an upswing in some civilian industries that have been slow for almost two years, is going to bring about as many problems as it will benefits. In fact, the slowdown of 1980 and early 1981 may have made the problem of replacing skilled workers who retired or were laid off, even more difficult than the shortage of 1978-1979.

But what's more to the point: "But if things do turn up, we will probably need to add more tools. We are not committing for these, now, however," Mr. Hanson adds.

While some are waiting, some have already begun to grow in anticipation of a strong 1982 market. The St. Paul-Minneapolis area has a strong concentration of precision machining companies—. There are 110 member companies of the National Tooling & Machining Association, says William Saal, president of Remmele Engineering Co. It is big, with four plants and 315 employees. It spent $4 million on new tools in 1980.

"We'll do about the same in 1981," says Mr. Saal. "In fact, we just finished our five year plan and that calls for a 6-in. G&L traveling column horizontal boring mill; a 5-in. G&L table type boring mill. And we may order an additional 5-in. boring mill. We'll also look at a 72-in. boring mill. In smaller equipment, we might order 10 to 15 new Bridgeports. We already have 65 of these machines."

Remmele Engineering obviously agrees with Mr. Smith that the 1980's call for new equipment additions by the contracting machining companies. But Remmele is also adding plant space, beside its tool additions. "We are putting in another 20,000 sq. ft. at one of our smaller plants," says Mr. Saal. "And we are negotiating for an acquisition that could give us another 65,000 sq. ft. In 1981, we're adding capacity that we expect we'll need in 1982."

Despite more automatic machines, "Skilled labor will continue to be a problem," says Mr. Saal. "We've set aside one small plant of 6000 sq. ft., as an 'in-company' training center. The trainees get one year at that facility and then three years at other plants." To recruit employees, Remmele scours at least 20 vocation high schools each year seeking recruits and adds about 20 of them each year to keep about 35 young workers in the program. ☐

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RESHAPING THE VISION

REACHING OUT TO THE WORKER

Tomorrow's work place will be radically altered. And that means managers must stretch out more to meet workers' needs and problems.

By Paul Cathey

There have always been American workers. The frontiersman and his wife who first cleared the land and then farmed it. The strong-backed laborers who built the railroads. The assembly workers on the first production lines. The millions of men and women whose hands produced the vast arsenal of weapons that won World War II. The labor militants who organized the great industrial unions—the AFL, CIO, UAW, USWA, UMW and others. The post WWII workers who aspired to—and generally achieved—the middle class affluence that Karl Marx never dreamed they would approach. These are today's workers—crushed by inflation, maligned for their falling productivity, beset by galloping automation, and overwhelmed by

floods of imports that steal their jobs.

And there are tomorrow's workers now moving through a confused educational system toward a brave new world where only the knowledge worker will have security.

Today's work place is an area of turmoil, uncertainty, conflict and transition. Twenty years from now as a new century dawns it will be vastly different from what we have known. And so will be the work force that mans (and womens) it.

It and they will have been reshaped in the fiery crucible of change whose flames were first set off in the 1960s and 1970s.

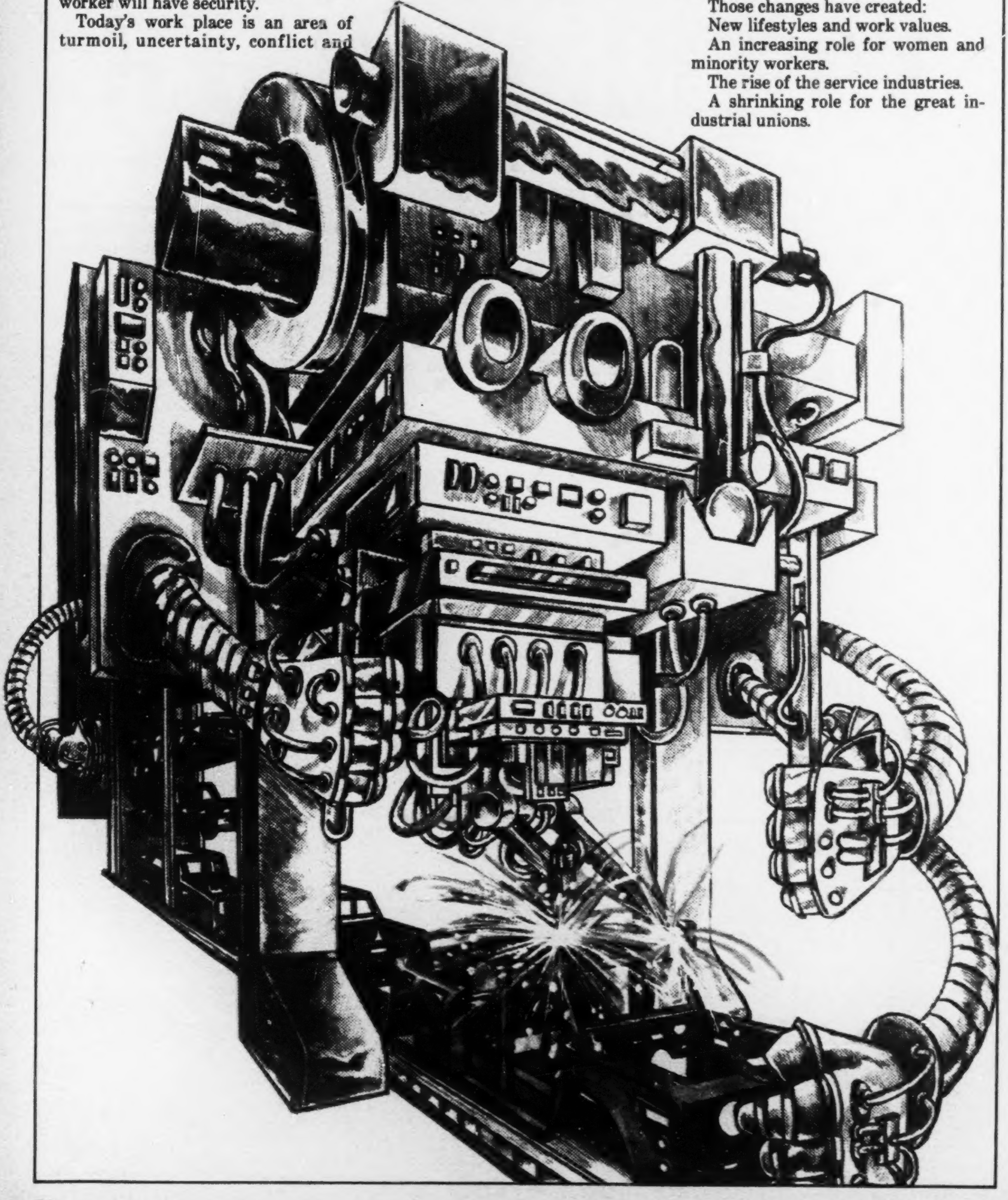
Those changes have created:

New lifestyles and work values.

An increasing role for women and minority workers.

The rise of the service industries.

A shrinking role for the great industrial unions.



Computers, automation and robots.

Ever increasing government regulation of job safety, health, worker privacy, and equal opportunity.

Differing concepts of the family and dual careers for husband and wife.

And for managers, along with a concern about worker productivity, a genuine interest in the employee as an individual.

By the year 2000 A.D. much of this ferment will have settled down. But before then we are in for some interesting times. In reaching out to the worker, management has already learned much—but still has much to learn.

For management to succeed it must carefully examine the forces active in the work place and where they are leading us. The most obvious place to start is the composition of the work force itself—both the present one and that projected for the years ahead. In other words a look at demographics.

The Labor Department's Bureau of Labor Statistics (BLS) is a bountiful source of work force data—present and projected. Late last year the BLS took its first searching look at labor force changes through 1995. It makes projections based on three possible scenarios—a high-growth rate for the labor force, a middle-growth pattern, and a low-growth rate.

"All three projections," says BLS, "indicate that women will account for two-thirds of labor force growth. Most of the growth for both men and women will occur in the prime working-age group—those 25 to 54 years of age. And the Black labor force will grow twice as fast as the white work force."

The expected change in terms of occupations is quite striking. Growth in manufacturing employment from 1980 to 1990, says BLS, will be only 11.1 pct. And other experts place it much lower than that.

This reflects the shift of the nation to a service-dominated economy. As proof consider these projected gains for other occupations in this decade: Communications, up 13 pct; the retail trades, up 20.4 pct; finance, insurance and real estate, up 26 pct; government, up 13.6 pct; and other services, up 34.6 pct.

Fortunately, to support this swing to jobs demanding knowledge workers, the prime working-age group will include an ever-growing percentage of those with college degrees or at least some college experience.

In the early '80s, older workers (age 55 and over), the group which has the least formal education, will be a decreasing part of the labor force.

In contrast, there were more than 30 million people in the work force (as of March '80) with one year or more of college, BLS points out. And nearly 17 million of them had completed 4 or more years of college, almost double the number of a decade earlier.

Since more than half the growth in the work force (59 pct) is expected to come from women and 22 pct from Blacks (male and female), this will put increased emphasis on more education and more job training for these groups.

"Skilled and professional workers will have to come from these groups in greater numbers than in the past if there is not to be a shortage," says BLS. "In addition, since much of the increase in the female labor force will probably come from mothers, employers may have to review their personnel practices—such as provision of day care—to attract these workers."

Galloping automation with "thinking" machines will almost eliminate blue-collar, manual workers.

There is another trend, constantly increasing, that will be of special benefit to working mothers. It's the use of flexible working schedules. BLS indicates that even now about 7.6 million workers or 12 pct of all those on full-time, nonfarm wage and salary jobs are on flexitime or other schedules that permit them to vary the time they begin and end work. Another 2.7 million part-time employees (working less than 35 hours a week) are also allowed to depart from fixed schedules, BLS notes.

The current drive to make American products more competitive with those of other nations—especially in our own markets—is going to radically change the work place.

In the drive to boost productivity, management is turning more and more to computers, automation and robotics. The automatic factory is again a glowing dream in the minds of industrial planners.

What does this mean for America's industrial workers? Obviously it means there are going to be fewer of them in the future. But how many less?

As mentioned above, the Bureau of Labor Statistics expects only an 11 pct gain in manufacturing employees this decade, contrasted with gains of up to 30 pct in the service industries.

However, one highly regarded management expert—Peter Drucker—believes blue-collar, manual workers in manufacturing are going to shrink drastically in the next 25 years. And he regards that as desirable because the blue-collar labor supply is drying up—fast.

There will be a need in coming years, Mr. Drucker believes, to either import large numbers of laborers into the U.S. or else "farm out" work to developing countries which possess plentiful, cheap labor.

These are some of what Mr. Drucker calls "demographic realities" which must be faced. In a recent address he outlined other realities and what must be done by business managers and by government leaders to adjust to them.

His paper, *Demographics and American Economic Policy*, was presented earlier this spring at a seminar celebrating the 100th anniversary of the Wharton Business School of the University of Pennsylvania.

"It's predictable, and practically certain," he declared, "that, barring nuclear war, the proportion of the American labor force engaged in blue-collar, manual work in manufacturing twenty-five years from now, around 2005 A.D., will not be much larger than the proportion now engaged in farming. That is less than 10 pct and not much more than 5 pct of the *total* labor force."

"Where there are now 20 million people employed in manual manufacturing work—a full fifth of the total labor force," he added, "the figures will be between 7 million and 12 million in another twenty-five years."

Mr. Drucker further stated, "The basic fact is that regardless of wage-levels, America cannot maintain a manufacturing base resting on traditional manual work and workers. The manpower needed will not be available at any price."

Four major demographic changes are now taking place in the world, he points out. Three of them are taking place in the U.S., he says, and in all other developed industrial countries as well. The fourth is external to this nation and taking place in the Third World.

First, the supply of new job force entrants available for traditional

(Cont. on p. 65)

manufacturing jobs in the U.S. will be one-third or less of the supply available in the last twenty years. One-third is the upper limit of the range, he indicates, the lower limit might be zero.

One reason for this, says Mr. Drucker is the baby bust which began in 1960, reducing the birth rate by 30 pct. Another reason, mentioned earlier in this story, is the increased education of those now in the work force or preparing to enter it.

With so few blue collars available in the future, the management analyst notes, the service industries will be able to attract them away from manufacturing by paying them to perform those duties which cannot be farmed out to developing nations—health care work in hospitals, for example.

The second demographic challenge, Mr. Drucker feels, is finding jobs for the new workers—people with long years of formal training and a resulting interest in knowledge jobs and career opportunities.

"But the U.S. and every other developed country," he adds, "will have to create up to 50 pct more knowledge jobs and career opportunities for highly schooled people every year for the next twenty years than this country ever had to create before."

The third demographic change: The composition of the workforce is changing as much as its structure. Traditionally, Mr. Drucker notes, the American work force was conceived as homogeneous, composed mainly of adult male heads of households engaged full-time in blue collar jobs.

"The American work force is rapidly becoming exceedingly heterogenous," says Mr. Drucker. "We have all but unmade what the nineteenth century considered its two proudest social achievements—that married women do not hire out for work, and that older people retire and are paid for not working.

"Within another ten or twenty years," he adds, "we will have returned—in the name of 'progress'—to the demographic realities of the preindustrial world—women participating in the labor force as much as men and people not retiring at any given, preset chronological age.

The fourth demographic challenge, Peter Drucker indicates, is that in developing nations, in the next fifteen or twenty years, the big problem will be finding work for young people qualified only for traditional manual, blue-collar work.

"By the year 2000," he says, "the majority of the population in the developing countries will be below twenty-five years of age or so, no matter how fast the birthrates are dropping in these countries."

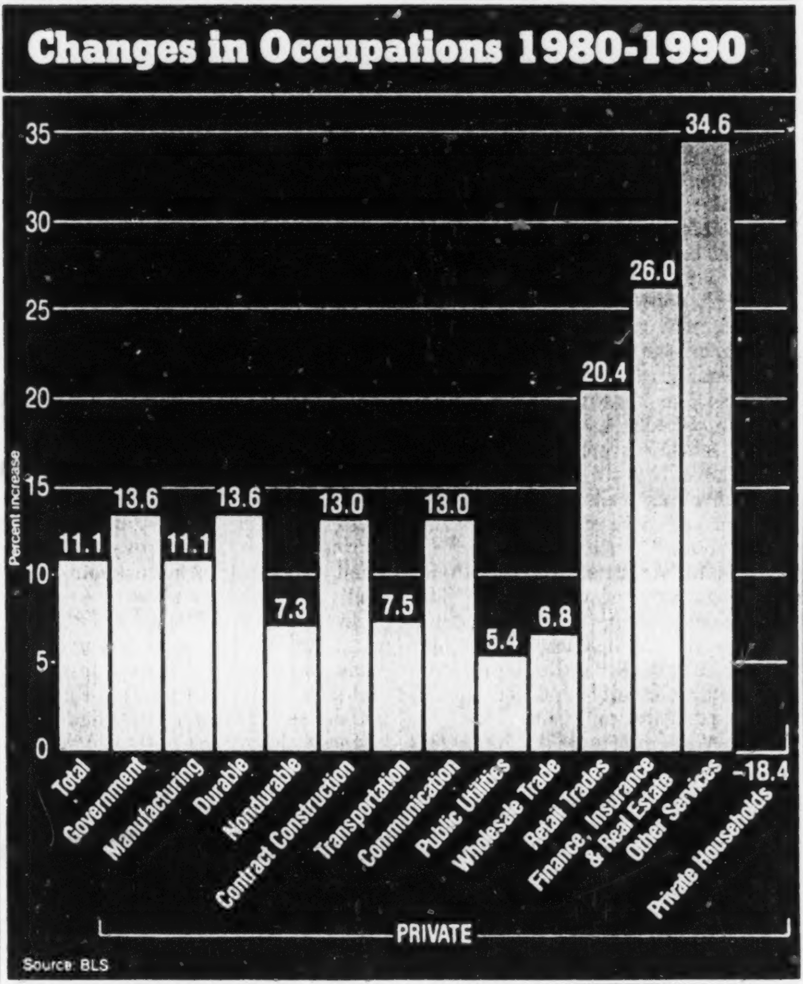
What will these four demographic realities mean for American management?

They mean that the U.S. economy must be based on using to the fullest its knowledge workers, Mr. Drucker believes. They mean manual labor in U.S. manufacturing will have to be performed largely by non-Americans, either bringing in the workers or farming out the work to developing countries, preferably those in this hemisphere, he feels.

They mean taking care of blue-collar workers made redundant by the shift to automated, high-technology work employing the knowledge people.

"The first reaction to this," says Mr. Drucker, "will predictably be a demand for massive 'training.' It's the wrong reaction and bound to lead to the kind of failure and frustration which has been the lot of all such 'training programs' since World War II—for example the CETA programs.

"Successful training especially of low-skilled people with limited horizons," he points out, "must *follow* job placement. It must be tied to a specific job and, preferably, done in conjunction with it, if not on it."



Changes in Occupations 1980-1990

Source: BLS

Mr. Drucker feels both business managers and government leaders have got to get rid of the myth that the bulk of the work force consists of adult male blue-collar workers and stop making plans and policies based on that false assumption.

"The paid work force," he says, "instead of being overwhelmingly adult males working fulltime is increasingly going to contain women and older people, working part-time as well as full-time, and working continuously as well as intermittently.

"This surely means," he feels, "that policies with respect to the human factor, whether Social Security, retirement rules, pensions, taxes or management decisions in respect to benefits, are increasingly inappropriate, becoming obsolete and may even do harm."

Capital formation will become our central economic demand and priority, he believes, because knowledge work is capital-intensive.

"The demand which capital investment in knowledge industries creates is not demand for manual work," he says. "The new heart/lung machine in the hospital and the body scanner do not create demand for cleaning women or orderlies. They create demand for engineers, for physicists, for medical technologists.

"Similarly," he continues, "capital investment in manufacturing industries based on knowledge work creates demand for knowledge workers—as it does in all automated industries, such as petroleum refining, the pharmaceutical industry or even in such far less dramatic 'automated processes' as making sausages in Madison, Wisconsin."

Mr. Drucker seems to be telling manufacturing managers and the government as well that we have a choice of becoming either another Japan or another Great Britain.

The point, Mr. Drucker indicates, is that "regardless of productivity per hour or per worker, 'developed' countries and their industries cannot possibly compete in manually-based work and manually-produced goods with Third World countries.

"If they attempt to do so," he notes, "they will inevitably 'develop down'. Great Britain is the obvious example."

The tide of automation sweeping in today is part of what author Alvin Toffler calls *The Third Wave* in his book of the same name. The first wave was the birth of the agricultural society. The second was the Industrial Revolution.

Speaking about work in the future in an *American Express* newsletter Mr. Toffler has said, "I believe you will see many more people working at home in 'electronic cottages' and avoiding the commuter crush. As the costs of commuting skyrocket and the costs of telecommunications plummet," he continued, "millions of people will be able to do their jobs in their own homes, which will be equipped with all of the necessary electronic tools. This is already happening across the country.

"For people who continue to commute to work," Mr. Toffler added, "flexitime will be the norm. Flexitime lets individuals work at times most convenient for them. It helps humanize work.

"Meanwhile, companies will become much more flexible," he added. "They will have the technology for customizing individual products and services. Consumers will have a much wider range of selection."

The drive for greater American productivity is nothing new. Back at the turn of the century Frederick Taylor, Frank Galbraith and others were doing pioneer work in time and motion studies. General Electric Co. was training managers in how to get better results before the turn of the century.

Efforts to boost output by boosting worker morale came later. By the 1940s, however, Elton Mayo, the father of human relations in industry, was conducting his now famous Hawthorne studies. They proved management had a lot to learn about what really motivates a worker.

Dual career couples may suffer stress if their chances for success split in different ways.

At Western Electric's Hawthorne plant Mr. Mayo varied working conditions in a series of tests involving lighting and temperature. But, regardless of the environmental changes, the group's output increased. And finally when Mr. Mayo returned conditions to the original circumstances, the output increased again!

Elton Mayo did conclude that the plant was a social system where the informal organization of the worker group is the key to successfully managing the individual worker, rather than the company's formal management system.

His conclusion was that the informal group would decide what output should be, what a fair day's work really meant.

So began the effort to deal with the worker as a human resource. But not until the 1970s did management take the behavioral sciences out of the college text books and apply them to motivating and managing workers, supervisors, and other managers.

There was a long journey from the time when the employee's main contact was the personnel manager to the present day when we have vice presidents of human resources—many of them trained in the behavorial sciences.

One of them traces that painful evolution this way:

"Developments in this field go in cycles," he says. "First there was the human relations movement of the 1950s. The contented cow philosophy. Treat employees kindly, it urged. The work place should be a happy place, peopled by happy people.

"That approach ebbed away. Lots of money was being spent, but the results were meager. Then came the influence of the government through the Equal Employment Opportunity (EEO) Act and the affirmative action campaign.

"Although EEO was a government mandate to hire more women and more minority workers it was a blessing in disguise. It gave us more access to some very talented people whose contributions to the labor force have been significant.

"Next," he adds, "came the sensitivity fads, the T-group techniques. To understand each other we must get close—let down our hair. Managers and others were closeted together for days revealing to each other their inner conflicts, their likes and dislikes, their desires. That, too, didn't accomplish much."

Finally in the 1970s, management began to recognize that the behavioral sciences could be successful—when applied, realistically and concretely, to on-the-job situations.

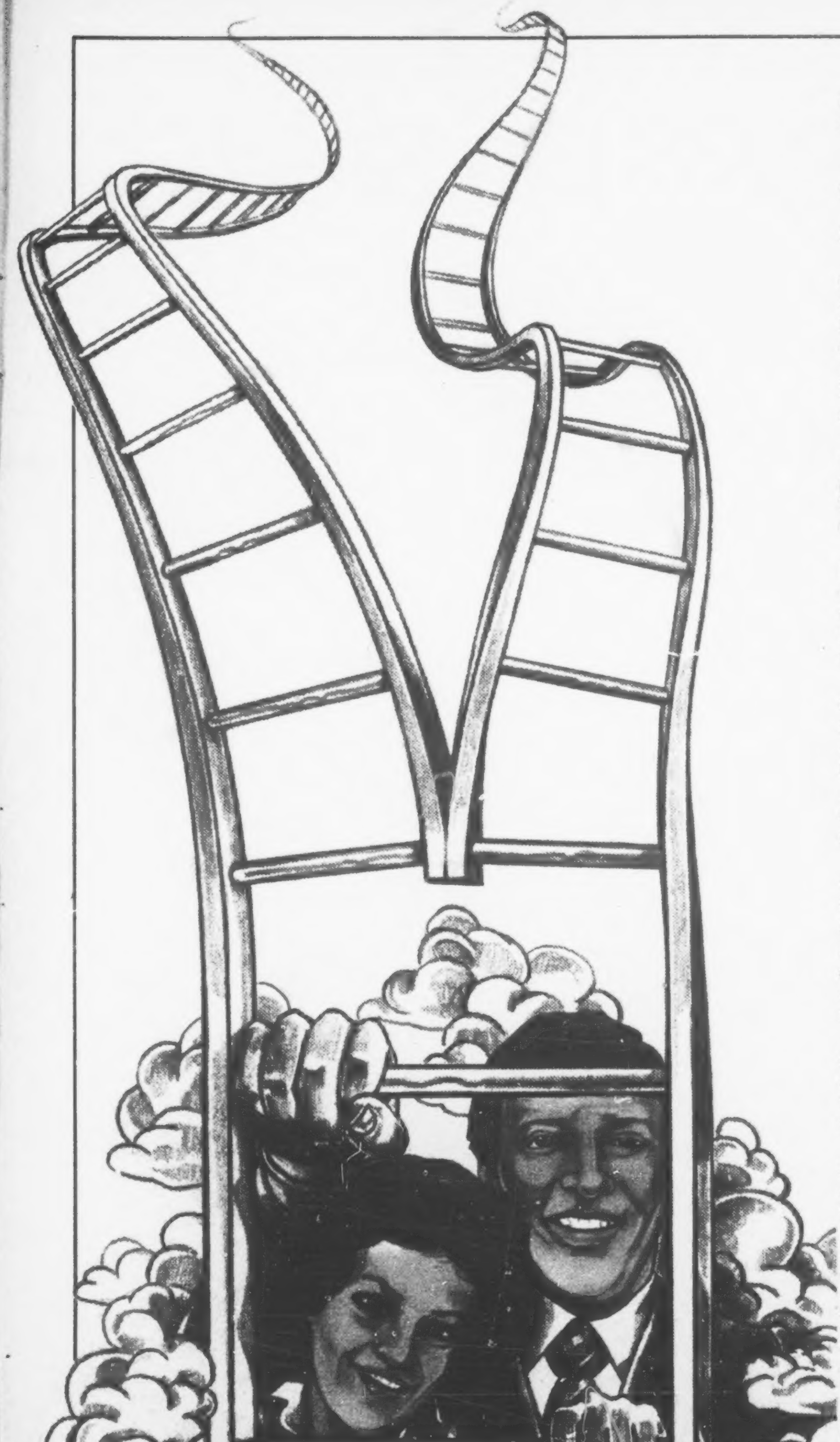
"We have a tremendous body of knowledge," says the human resources vice president, "tested and validated by industry, on how people behave, what their needs are, how they perceive things, what their attitudes are, why these attitudes exist, and how they can be changed."

The trick, he explains, is not to convert managers into behavioral scientists, but to give them some job-related behavioral techniques that will work in helping employees solve their problems.

"What we try to do in our training," says the human resources man, "is help managers identify the most common problems and develop their skills in understanding the behavior patterns that cause that employee behavior. Then the managers are in a position to deal effectively with those problems as they come up."

Asked to describe the most common employee job problems, he gives this list:

Tardiness and absenteeism.
Poor work.
Poor attitude.
Lack of motivation.



Belief by an employee that he's doing fine when actually he isn't meeting the company's standards.

Fighting with other employees.

Working on projects different from those his supervisor wants done.

Off-the-job problems that are interfering with work performance.

This concern for the employee is obviously not something the personnel manager of the 1930s, 1940s, or 1950s would have bothered about. His concerns were processing the hires and fires, keeping the records, charting "merit" increases and, in general, supervising the paperwork.

The evolution of titles in the people function of a company also traces the growing awareness of the value of manpower (and women power) in the company's eyes.

The personnel managers gave way to directors or managers of manpower development. That title, in turn, went out the window when EEO brought about the hiring of more women.

Managers of human resources came next. And now, as noted, the human resources directors are often achieving vice presidential status. Human resources is now largely a staff function reporting to the chief executive officer or the executive committee.

And reporting to human resources are all those functions it superseded and incorporated—personnel, recruiting, training and development, labor relations, industrial relations, legal specialists, employee benefits, insurance, Equal Employment Opportunity and affirmative action.

Where companies have plants and divisions in other locations than the corporate headquarters, there are often human resources directors stationed there.

In the 1980s and beyond the human resources director is certain to become a prime mover and shaker in the corporate hierarchy.

Right now these men and women are driving to have a greater say in long-range and strategic planning before it becomes a concrete reality. Plans that overlook the human factor and future hiring needs, they say, are doomed to failure.

Long-range human resources planning is still in its infancy. A survey in 1980 revealed that almost half the companies questioned still only project their human resources needs in periods of one year or less.

Training is an area that also has come far—but still has a long way to go. Progressive companies such as

General Electric, Gould and others have training centers, often incorporated in separate buildings and employing all the latest in training techniques.

Realizing that workers are low in communications skills, courses are being added that teach managers and supervisors how to write and speak more effectively. More courses are offered specifically for office workers and secretaries.

When it comes to promotions, the human resources managers are abandoning pencil and paper testing of applicants. One reason is that courts have ruled, as a result of EEO, that such testing was biased and discriminated against minority applicants.

But there was another reason. Such paper testing often didn't reveal how a prospective manager or supervisor would actually perform on the job. That can be determined, more accurately, through a technique called skills assessment.

Pioneered by Dr. Douglas Bray of American Telephone and Telegraph Co. in the mid-1950s it gives an applicant for promotion a chance to reveal how he or she would do on the job.

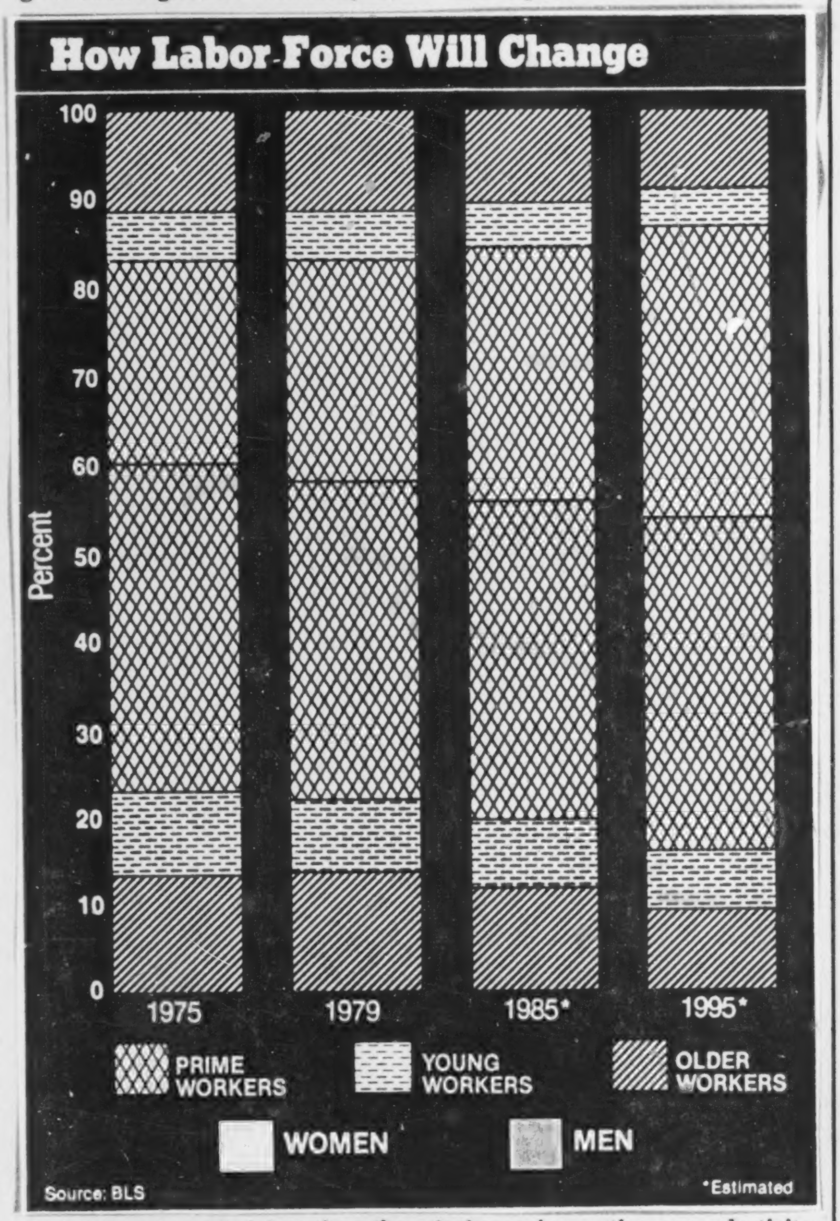
As applied to training at AT&T, Dr. Bray came up with a series of tests to gauge on-the-job performance—which is then evaluated by a panel of AT&T managers. The applicants play business games, participate in leaderless discussion groups and in in-depth interviewing.

Particularly effective is the in-basket exercise. Each applicant gets an in-basket filled with job-related problems presented in the form of letters, memos, notes from the boss, records of phone calls, reports and so on. He or she is then told to take whatever actions seem needed.

The documents are in no specific order. There is no indication which are more important. After the candidate completes the exercise, his or her performance can be immediately evaluated.

Usually it is followed by an extensive interview in which the assessor questions the applicant's decisions. Questions which may be asked could include: How did you decide which matters to handle first? Why did you act on this rather than on that? How good a boss was the person who had this job before you? What sort of problems does this department have? What would you do about correcting them?

Skills assessment has spread to many companies including Union Carbide, National Steel, and Ford Motor Co. An associate of Dr. Bray's, Dr. William C. Byham has formed his own company, Development Dimensions International, to introduce the concept into companies and into such government agencies as the EEO, the Social Security Administration, the Office of Management and Budget, the Department of Agriculture and the Federal Bureau of Investigation.


How Labor-Force Will Change

Source: BLS

*Estimated

The title of vice president of human resources was not the only one having a human relationship to come out of the 1970s. There are now vice presidents of public affairs, vice presidents of government affairs, and vice presidents of productivity. Westinghouse in 1980 became the first company to establish a vice president of productivity whose prime function is drawing together all the elements of the company's already successful efforts in productivity improvement.

As a part of this drive Westinghouse is creating a productivity center near its Pittsburgh headquarters which will investigate the most advanced manufacturing systems incorporating robotics, laser actuated control systems, and CAD/CAM as well as the latest in training techniques for employees. The aim: Designing and building new plants which will assure the maximum in productivity and in quality control.

(Cont. on p. 72)

For the last few years American manufacturers, beset with falling productivity and deteriorating quality, have been avidly studying Japan's methods in those two areas. The burning questions: What is the secret for that country's high productivity? How does it get the high quality it builds into its products? Can we adapt these methods in the American factory?

American managers have visited Japanese factories. American consultants are doing a thriving business introducing Japanese techniques—notably their quality circle concept—into American companies.

The Japanese QC (quality control) circles where small groups of factory workers are asked to come up with suggestions on improving productivity, turning out better products, solving work problems, are clearly an outgrowth of the Zero Defects (ZD) drive installed by U.S. defense and aerospace contractors in the late 1950s and early 1960s. ZD began at Martin Marietta in Orlando, Fla. as the brain child of Philip Crosby, who later became a vice president at IT&T.

Asked the question, "Why can't we do perfect work—defect free work?" he came up with the Zero Defects concept—that mistakes don't have to happen.

The Zero Defects programs spread until the government required that setting up such a program was a prerequisite to getting a contract.

Opinions are divided these days on whether we can incorporate—in toto—the Japanese way of working. Is it unique to their way of life, their culture?

In a way the debate is an extension of the philosophy of co-determination—the European system of making workers or labor leaders a part of management.

Election of United Auto Workers president Douglas Fraser to the board of General Motors was proba-

PAYMENT DUE

bly an isolated phenomenon, brought about by the current crisis in the domestic auto industry. Certainly it runs counter to the approach of the American labor movement which does not want to be a part of management any more than management wants to have them.

Perhaps the best answer to all these questions is a blend of the Japanese and the American styles of managing. And Dr. William G. Ouchi, a professor of management at the Graduate School of Management of the University of California, Los Angeles (UCLA) has done just that.

A consultant with Booz, Allen & Hamilton, he has described this Type Z organization in one of that company's recent publications.

He first describes the difference between the present Type A (American) system of management and the Type J (Japanese) system.

"In the classic Japanese model, Type J," he says, "individual mobility has classically been low, and norms of collectivism have been strongly supported.

"There has evolved a corporate style that includes lifetime employment," he adds. "It produces university graduates without specialized experience so that the philosophy of an employer can be instilled in 'uncluttered' minds.

"For the first ten years of employment, all workers receive similar wages and promotions, so thinking becomes long-term. Workers are less competitive, more open, and more willing to work as a group."

Dr. Ouchi continues, "Decisions are not made by one person but by consensus, with up to 80 persons participating. While initial decision making may be slow, implementation is faster and more efficient. And with collective and consensual decision making comes collective responsibility.

"The Type J organization," says Dr. Ouchi, "encourages a worker to become a permanent member of a company family. This 'family' relationship implies a system of informal and implicit controls in which performance objectives are implicitly known and shared by all.

"It also implies," he finalizes, "that companies take a holistic view of workers, concerned with everything from matchmaking to avoiding strains and competition in employee relations."

Turning to the Type A or U.S. model he says, "Here mobility and individual independence yield a business system in which personal responsibility and decision making are the norms.

"High mobility between companies means less integration of the employee into the values of the individual organization. Relationships become contractual, explicit, objective-oriented and formal.

"Specialization is the rule as employee turnover becomes the growing custom. Again," he emphasizes, "this turnover causes the need for more promotions, quicker evaluations, and therefore, more formalized boss-subordinate relationships."

What, then, is a Type Z organization?

"A Type Z organization," says Dr. Ouchi, "blending the best of Types A and J, has evolved at companies like IBM, General Motors, Eastman Kodak, and Proctor & Gamble.

"In these Type Z organizations," he adds, "borrowing from the Japanese management styles no one is promoted solely on the basis of clearly defined and objective performance goals. Judging is more subjective and individualized.

Companies who care offer employees more and more help with off-the job and family problems.

"Career paths," he notes, "are only moderately specialized, promoting a stability in the organization's membership that fosters holistic concern for people, particularly between superiors and subordinates.

"Within this modified format," he concludes, "are the Japanese implicit and informal controls, coupled with U.S. explicit and formalized measures—in essence, the best of both worlds."

There is much debate whether today's U.S. workers are different than those of twenty years ago. Certainly their lifestyles are vastly different.

The computer programmer whose weekend hobby is stock car racing is different. The woman manager who is a single parent is different. The manager who cannot relocate for a promotion or a better job because his wife has an even better opportunity where they now live is clearly different.

But what about work values? Have they changed? There can be no question that, as Dr. Ouchi notes, corporate loyalty is dying out in the U.S. Younger employees—and some of the older ones as well—are self-actualizers.

They want to know "what's in it for them" if they stay with the company. And if the answers don't come back fast enough, they are quite capable of cold-bloodedly planning their own careers wherever the opportunities may take them.

Any management that does not learn how to live with these "new breed" workers is in for rough times.

It is not correct to imply, as Dr. Ouchi seems to, that American companies take less interest in the worker's "family" concerns than Japanese companies.

Evolving out of efforts in the 1950s and 1960s to salvage the alcoholic employee before he destroyed himself and his work skills, progressive companies have put in place vast programs to help the employee with all the off-the-job problems that are disrupting the work.

The breakthrough in this came late in the '60s when a psychiatric social worker named Otto Jones developed at Kennecott Copper a phone hotline system for troubled employees. By dialing the number an employee, without the company's knowledge, could get help with personal problems of any nature.

The idea spread to other companies. Otto Jones and others set up firms which will provide, on a fee basis, such programs for a group of companies. Often the employee can get the aid, twenty-four hours a day, by dialing a word such as C-O-N-C-E-R-N, I-N-S-I-G-H-T or H-E-L-P N-O-W.

As one such counselor told *Iron Age:* "We handle adoptions, get kidney dialysis machines, resolve disputes with landlords and untangle problems in hit-and-run accidents."

One of the early programs of this type was EAR (Employee Advisory Resource) established by Control Data Corp. and later at its subsidiary, Commercial Credit Co.

From this Control Data went on to evolve a whole raft of social aid programs, not only for its employees but of benefit to unemployed minorities and the disadvantaged, wherever they were found.

It's doubtful that any other American company has ever approached Control Data on this score. And, despite all its altruism, or maybe partly because of it, Control Data is highly successful—net earnings of $150.6 million in 1980 and the sixth straight year of income improvement.

What Control Data is doing—and

has done—in the social aid area was well summed up by its deputy chairman Norbert R. Berg in a talk given this March. He was speaking at the dedication of the company's newest FAIR BREAK plant—a program which has opened up closed factories, bowling alleys, and other buildings in the depressed areas of half a dozen cities, providing jobs for the underemployed and the unemployed.

In part, Mr. Berg said, "Over the past 21 years, enhancement of our human resources has been, and continues to be, one of our personal concerns."

Describing the EAR program he noted, "Since it began in 1974 it has given assistance to over 31,000 employees, spouses, and dependents in the area of financial, legal, chemical (drug), personal and work-related problems.

"Another program," he continued, "is called HOMEWORK. It's designed to make it possible for employees with long-term disabilities to work in their own homes. With the development of our new PLATO computer-based education courses, we're able to train homebound employees to be computer programmers.

"Control Data," he also noted, "has the best record of employment for ex-convicts, former clergy, Vietnamese and Laotian refugees of any company in our headquarters area of Minneapolis and St. Paul.

"Our flexible hours program," said Mr. Berg, "began in 1972. Presently 65 pct or 30,000 of our U.S. employees are making use of it.

"Still another program," he continued, "is STAYWELL. It gives our employees and their spouses an opportunity to identify health risks and learn what they can do to *prevent* illness."

Through the expertise of its Commercial Credit subsidiary, Mr. Berg explained, employees are instructed in inflation-fighting.

"Intensive training courses on PLATO," he noted, "are given employees in such subjects as creating a tax-oriented budget, money management, proper use of credit, investing in insurance planning, and comparison shopping.

"In 1974 when EAR was established," he said, "we added a work-related ombudsman to our grievance procedure system. The ombudsman makes sure the grievance system works for both the employee and the company. Now we're getting ready to implement the next logical step—a system of peer review or arbitration."

Clearly Control Data is a company reaching out to its employees—and others as well.

But how well will all American management succeed in reaching out to the worker in the coming years?

It is clear that despite the very small work force that will be needed in manufacturing, despite an all-enveloping automation, despite Alvin Toffler's electronic cottage, and despite a society heavily populated with Ph.Ds, there will always be some whose job talents are meager.

What happens to them? It is all very well to say, as panelists did recently at a productivity seminar, that these people can be trained and retrained, that they can get jobs making robots until the robots take over that job themselves. But that is not enough.

Management may have to take over a much larger part of the educational system if our schools continue to do the poor job now so evident.

Business and industry will have to hold on to concern for *all* its workers—no matter how wide the gap between those workers and the machines which are really doing the work.

If this does not take place, society could face the prospect of large groups of the semi-educated and the semi-skilled wandering through the computer fields foraging for food. □

Civilian Labor Force by Age, Sex and Race 1979 to 1995*

Figures represent percent of that group in work force	1979	1985*	1990*	1995*
MEN				
Ages, 16 to 24	77.9	76.9	76.8	76.1
25 to 54	94.4	94.0	93.7	93.4
55 +	44.2	43.1	39.6	37.6
65 +	20.0	17.5	15.8	14.3
WOMEN				
Ages, 16 to 24	62.6	69.7	73.9	77.0
25 to 54	62.6	71.1	75.9	78.0
55 +	23.2	22.1	20.7	20.2
65 +	8.3	7.7	7.3	6.8
White Males, all ages	78.6	78.5	78.1	77.7
White Females, all ages	50.6	56.2	59.3	60.7
Black and Other Minority, Men, all ages	71.9	71.9	71.5	71.3
Black and Other Minority Women, all ages	53.5	58.3	61.1	63.5

*This assumes a modest growth of the labor force. There are other projections assuming a low growth rate and a high growth rate.

Source: Bureau of Labor Statistics

Management in America Part III: Rebuilding Our Competitive Strength will appear in the Aug. 3 issue of Iron Age.

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EFFECTIVE MAY 18, 1981 (REVISED)

MATERIALS NEWSFRONT

(Effective May 18, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	90.00 to 91.00
No. 1 dealer bundles	118.00 to 119.00
No. 1 factory bundles (auto)	121.00 to 122.00
No. 2 bundles	70.00 to 71.00
No. 1 busheling	118.00 to 119.00
Machine shop turn.	29.00 to 30.00
Shoveling turnings	54.00 to 55.00
Cast iron borings	53.00 to 54.00
Low phos. punchings plate	123.00 to 124.00
Heavy turnings	90.00 to 91.00
No. 1 RR hvy. melting	117.00 to 118.00
Rails, 2 ft. and under	127.00 to 128.00
Scrap rails, random lgth.	108.00 to 109.00
RR specialties	122.00 to 123.00
No. 1 machinery cast	104.00 to 105.00
Cupola cast	97.00 to 98.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 730.00
18-8 turnings	615.00 to 620.00

Chicago

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles (auto)	115.00 to 116.00
No. 2 dealer bundles	74.00 to 75.00
Unburned bundles	60.00 to 61.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	100.00 to 101.00
Machine shop turn.	49.00 to 50.00
Mixed bor. and turn.	50.00 to 51.00
Shoveling turnings	53.00 to 54.00
Cast iron borings	74.00 to 75.00
Low phos. forge crop	123.00 to 124.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	125.00 to 126.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	98.00 to 99.00
Reroller rails	125.00 to 126.00
Rails, 2 ft. and under	127.00 to 128.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	169.00 to 170.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	119.00 to 120.00
Stove plate	114.00 to 115.00
Steel car wheels	122.00 to 123.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to $ 86.00
No. 2 hvy. melting	72.00 to 75.00
No. 1 dealer bundles	105.00 to 108.00
No. 2 dealer bundles	56.00 to 59.00
No. 1 busheling	102.00 to 105.00
Shredder scrap	97.00 to 100.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	56.00 to 59.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	102.00 to 105.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	122.00 to 125.00
RR specialties	104.00 to 107.00
Rails, 2 ft. and under	124.00 to 127.00
Cupola cast	81.00 to 84.00
Heavy breakable cast	67.00 to 70.00
No. 1 machinery cast	118.00 to 121.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to $ 79.00
No. 2 hvy. melting	76.00 to 77.00
No. 1 dealer bundles	98.00 to 99.00
No. 2 bundles	47.00 to 48.00
No. 1 busheling	95.00 to 96.00
Drop forge flashings	75.00 to 76.00
Machine shop turn.	44.00 to 45.00
Mixed borings and turn.	38.00 to 39.00
Shoveling turnings	45.00 to 46.00
Cast iron borings	45.00 to 46.00
Heavy breakable cast	69.00 to 70.00
Mixed cupola cast	82.00 to 83.00
Automobile cast	113.00 to 114.00
Stainless	
18-8 bundles and solids	670.00 to 680.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	155.00 to 165.00

Youngstown

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 dealer bundles	62.00 to 63.00
Machine shop turnings	24.00 to 25.00
Shoveling turnings	38.00 to 39.00
Low phos. plate	101.00 to 102.00
Electric furnace bundles	101.00 to 102.00
Galvanized bundles	88.00 to 89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles	114.00 to 115.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	26.00 to 27.00
Cut structural & plates, 2 ft. and under	131.00 to 132.00
Low phos. punchings plate	131.00 to 132.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	97.00 to 98.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	130.00 to 131.00
Rails, 18 in. and under	131.00 to 132.00
Steel axle turnings	71.00 to 72.00
Railroad cast	125.00 to 126.00
No. 1 machinery cast	125.00 to 126.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	575.00 to 585.00
18-8 turnings	450.00 to 475.00
430 bundles	125.00 to 135.00

Buffalo

No. 1 hvy. melting	$ 67.00 to $ 68.00
No. 2 hvy. melting	55.00 to 56.00
No. 1 busheling	74.00 to 75.00
No. 1 dealer bundles	72.00 to 73.00
No. 2 dealer bundles	44.00 to 45.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	26.00 to 27.00
Low phos. plate	100.00 to 101.00
Structural and plate, 2 ft. and under	108.00 to 109.00
Rails, 2 ft. and under	86.00 to 87.00
Scrap rails, random lgth.	66.00 to 67.00
No. 1 machinery cast	106.00 to 107.00
No. 1 cupola cast	74.00 to 75.00

St. Louis

No. 1 hvy. melting	$ 91.00 to $ 92.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	75.00 to 76.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	91.00 to 92.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 94.00 to $ 95.00
No. 2 heavy melting	84.00 to 85.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	72.00 to 73.00
No. 1 busheling	94.00 to 95.00
Shredder scrap	104.00 to 105.00
Machine shop turn.	36.00 to 37.00
Shoveling turnings	44.00 to 45.00
Cast iron borings	44.00 to 45.00
Electric furnace bundles	94.00 to 95.00
Elec. furnace, 3 ft. & under	84.00 to 85.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	106.00 to 107.00
No. 1 RR hvy. melting	96.00 to 97.00
Scrap rails, random lgth.	96.00 to 97.00
Rails, 18 in. and under	114.00 to 115.00
Angles and splice bars	106.00 to 107.00
No. 1 cupola cast	104.00 to 105.00
Unstripped motor blocks	72.00 to 73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 75.00 to $ 76.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	88.00 to 89.00
No. 2 bundles	51.00 to 52.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	115.00 to 116.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 48.00 to $ 49.00
No. 2 hvy. melting	43.00 to 44.00
No. 2 dealer bundles	40.00 to 42.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 65.00 to $ 67.00
No. 2 hvy. melting	60.00 to 62.00
No. 1 dealer bundles	79.00 to 81.00
No. 2 bundles	32.00 to 34.00
No. 1 busheling	74.00 to 76.00
Shredder scrap	80.00 to 82.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	22.00 to 24.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	60.00 to 62.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 68.00 to $ 70.00
No. 2 hvy. melting	60.00 to 62.00
No. 1 dealer bundles	55.00 to 57.00
No. 2 dealer bundles	40.00 to 42.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 66.00 to $ 68.00
No. 2 hvy. melting	56.00 to 58.00
No. 1 dealer bundles	53.00 to 55.00
No. 2 dealer bundles	36.00 to 38.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to 118.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 96.00 to $ 98.00
No. 2 hvy. melting	85.00 to 87.00
No. 2 bundles	72.00 to 74.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	88.00
No. 1 dealer bundles	90.00
No. 2 bundles	70.00
Mixed steel scrap	67.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	48.00
Short steel turn.	52.00
Mixed bor. and turn.	48.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	93.00 to 94.00
No. 2 bundles	63.00 to 64.00
Machine shop turn.	20.00 to 21.00
Crushed turnings	44.00 to 45.00
Shredder scrap	101.00 to 102.00
Cut structural plate 2 ft. and under	118.00 to 119.00
Unstripped motor blocks	83.00 to 84.00
Cupola cast	99.00 to 100.00

EFFECTIVE MAY 26, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	293	294	307	257
Buffalo	81	87	72	64
Pittsburgh	442	456	463	362
Youngstown	143	151	153	102
Cleveland	175	180	182	145
Detroit	158	174	183	141
Chicago	669	647	592	477
Cincinnati	113	103	109	106
St. Louis	101	100	102	86
Southern	250	261	261	270
Western	160	160	157	139
U.S. Production	2,585	2,613	2,581	2,149

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective May 26, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,585	2,613	52,011	49,504
Capability Utilization Rate	86.4	87.3	85.1	81.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$92.50	$96.17	$100.50	$76.50
No. 2 bundles	$64.83	$67.50	$ 75.50	$53.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$101.50	$105.50	$108.50	$78.50
No. 1 steel, Philadelphia	84.50	84.50	88.50	80.50
No. 1 steel, Chicago	91.50	98.50	104.50	70.50
No. 1 bundles, Detroit	98.50	98.50	108.50	71.50
Low Phos., Youngstown	101.50	101.50	109.50	80.50
No. 1 mach'y cast., Pgh	99.50	104.50	104.50	91.50
No. 1 mach'y cast., Phila.	118.50	119.50	121.50	115.50
No. 1 mach'y cast., Chi.	129.50	129.50	127.50	122.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective May 26, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	5/18/81
Copper (C)	80.70-85.00	80.05-85.00	5/25/81
Lead	36.00-38.00	38.00	5/ 5/81
Magnesium Ingot	125.00	116.00	9/15/80
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$466.50
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.67
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$10.62
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

May 18—Holiday
May 19—573.64
May 20—571.63
May 21—573.10
May 22—571.40

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80	71¼
Yellow brass	69⅝	64½
Red brass	74⅝	68⅛
Comm. bronze	76⅛	69⅛
Mang. bronze	68⅝	66⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	62
Light copper	53
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	32
Radiators	54

Aluminum

New mixed clips	37	—38
Old sheet	34	—35
Old cast	34	—35
Clean dry borings	35	—36

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	39	—40
Mixed L.C. clips	31	—32
Old sheets and cast	25	—26
Boring and turnings	22	—23
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	69	—70
No. 2 copper wire	58	—59
Light copper	55	—56
Radiators	44	—45
No. 1 composition	60	—61
No. 1 composition turn'gs	58	—59
Cocks and faucets	42	—43
Clean heavy yellow brass	37	—38
Brass pipe	42	—43
New soft brass clippings	52	—53
Yellow brass rod ends	44	—45
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE MAY 26, 1981

MATERIALS NEWSFRONT

(Effective May 26, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$101.00 to	$102.00
No. 2 hvy. melting	90.00 to	91.00
No. 1 dealer bundles	115.00 to	116.00
No. 1 factory bundles (auto)	121.00 to	122.00
No. 2 bundles	67.00 to	68.00
No. 1 busheling	115.00 to	116.00
Machine shop turn.	24.00 to	25.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	48.00 to	49.00
Low phos. punchings plate	121.00 to	122.00
Heavy turnings	90.00 to	91.00
No. 1 RR hvy. melting	117.00 to	118.00
Rails, 2 ft. and under	127.00 to	128.00
Scrap rails, random lgth.	108.00 to	109.00
RR specialties	122.00 to	123.00
No. 1 machinery cast	99.00 to	100.00
Cupola cast	92.00 to	93.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	720.00 to	730.00
18-8 turnings	615.00 to	620.00

Chicago

No. 1 hvy. melting	$ 91.00 to	$ 92.00
No. 2 hvy. melting	85.00 to	86.00
No. 1 dealer bundles	102.00 to	103.00
No. 1 factory bundLES (auto)	109.00 to	110.00
No. 2 dealer bundles	69.00 to	70.00
Unburned bundles	57.00 to	58.00
No. 1 busheling	95.00 to	96.00
Shredder scrap	94.00 to	95.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	71.00 to	72.00
Low phos. forge crop	119.00 to	120.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to	128.00
Low phos. 2 ft. and under	121.00 to	122.00
No.1 RR hvy. melting	95.00 to	96.00
Scrap rails, random lgth.	92.00 to	93.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	121.00 to	122.00
RR couplers and knuckles	118.00 to	119.00
RR car axles	163.00 to	164.00
No. 1 machinery cast	129.00 to	130.00
Cupola cast	119.00 to	120.00
Stove plate	114.00 to	115.00
Steel car wheels	116.00 to	117.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 83.00 to	$ 86.00
No. 2 hvy. melting	72.00 to	75.00
No. 1 dealer bundles	105.00 to	108.00
No. 2 dealer bundles	56.00 to	59.00
No. 1 busheling	102.00 to	106.00
Shredder scrap	93.00 to	96.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	56.00 to	59.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	102.00 to	105.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	122.00 to	125.00
RR specialties	104.00 to	107.00
Rails, 2 ft. and under	124.00 to	127.00
Cupola cast	81.00 to	84.00
Heavy breakable cast	67.00 to	70.00
No. 1 machinery cast	118.00 to	121.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	76.00 to	77.00
No. 1 dealer bundles	98.00 to	99.00
No. 2 bundles	47.00 to	48.00
No. 1 busheling	95.00 to	96.00
Drop forge flashings	75.00 to	76.00
Machine shop turn.	44.00 to	45.00
Mixed borings and turn.	38.00 to	39.00
Shoveling turnings	45.00 to	46.00
Cast iron borings	45.00 to	46.00
Heavy breakable cast	69.00 to	70.00
Mixed cupola cast	82.00 to	83.00
Automobile cast	113.00 to	114.00
Stainless		
18-8 bundles and solids	670.00 to	680.00
18-8 turnings	530.00 to	540.00
430 bundles and solids	155.00 to	165.00

Youngstown

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	104.00 to	105.00
No. 2 dealer bundles	70.00 to	71.00
Machine shop turnings	24.00 to	25.00
Shoveling turnings	38.00 to	39.00
Low phos. plate	101.00 to	102.00
Electric furnace bundles	101.00 to	102.00
Galvanized bundles	88.00 to	89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to	$ 94.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	114.00 to	115.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	26.00 to	27.00
Mixed bor. and turn.	26.00 to	27.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	26.00 to	27.00
Cut structural & plates, 2 ft. and under	126.00 to	127.00
Low phos. punchings plate	126.00 to	127.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	97.00 to	98.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	130.00 to	131.00
Rails, 18 in. and under	131.00 to	132.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	108.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	575.00 to	585.00
18-8 turnings	450.00 to	475.00
430 bundles	125.00 to	135.00

Buffalo

No. 1 hvy. melting	$ 67.00 to	$ 68.00
No. 2 hvy. melting	55.00 to	56.00
No. 1 busheling	74.00 to	75.00
No. 1 dealer bundles	72.00 to	73.00
No. 2 dealer bundles	44.00 to	45.00
Machine shop turn.	14.00 to	15.00
Mixed bor. and turn.	23.00 to	24.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	23.00 to	24.00
Low phos. plate	95.00 to	96.00
Structural and plate, 2 ft. and under	103.00 to	104.00
Rails, 2 ft. and under	81.00 to	82.00
Scrap rails, random lgth.	61.00 to	62.00
No. 1 machinery cast	101.00 to	102.00
No. 1 cupola cast	69.00 to	70.00

St. Louis

No. 1 hvy. melting	$ 89.00 to	$ 90.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	89.00 to	90.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 93.00 to	$ 94.00
No. 2 heavy melting	83.00 to	84.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	70.00 to	71.00
No. 1 busheling	93.00 to	94.00
Shredder scrap	101.00 to	102.00
Machine shop turn.	35.00 to	36.00
Shoveling turnings	42.00 to	43.00
Cast iron borings	43.00 to	44.00
Electric furnace bundles	93.00 to	94.00
Elec. furnace, 3 ft. & under	83.00 to	84.00
Structural and plate, 2 ft.	110.00 to	111.00
Structural and plate, 4 ft.	105.00 to	106.00
No. 1 RR hvy. melting	94.00 to	95.00
Scrap rails, random lgth.	93.00 to	94.00
Rails, 18 in. and under	111.00 to	112.00
Angles and splice bars	105.00 to	106.00
No. 1 cupola cast	100.00 to	101.00
Unstripped motor blocks	72.00 to	73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 79.00 to	$ 80.00
No. 2 hvy. melting	75.00 to	76.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	51.00 to	52.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	25.00 to	26.00
Low phos. 18 in. and under	120.00 to	121.00
Rails, random length	85.00 to	86.00
Rails, 2 ft. and under	107.00 to	108.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 48.00 to	$ 49.00
No. 2 hvy. melting	43.00 to	44.00
No. 2 dealer bundles	40.00 to	42.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 65.00 to	$ 67.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	79.00 to	81.00
No. 2 bundles	32.00 to	34.00
No. 1 busheling	74.00 to	76.00
Shredder scrap	80.00 to	82.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	22.00 to	24.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	60.00 to	62.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 64.00 to	$ 66.00
No. 2 hvy. melting	56.00 to	58.00
No. 1 dealer bundles	51.00 to	53.00
No. 2 dealer bundles	36.00 to	38.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 64.00 to	$ 66.00
No. 2 hvy. melting	54.00 to	56.00
No. 1 dealer bundles	51.00 to	53.00
No. 2 dealer bundles	34.00 to	36.00
Machine shop turn.	12.00 to	14.00
Shoveling turnings	17.00 to	19.00
Cast iron borings	12.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to	116.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 96.00
No. 2 hvy. melting	83.00 to	85.00
No. 2 bundles	70.00 to	71.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$101.00 to	$102.00
No. 2 hvy. melting	93.00 to	94.00
No. 2 bundles	63.00 to	64.00
Machine shop turn.	20.00 to	21.00
Crushed turnings	44.00 to	45.00
Shredder scrap	101.00 to	102.00
Cut structural plate 2 ft. and under	118.00 to	119.00
Unstripped motor blocks	83.00 to	84.00
Cupola cast	99.00 to	100.00

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PUBLICATION HAVE BEEN FILMED

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79-82, 122, 126-127, 130.

JUNE

22

1981

Chilton's

MANUFACTURING SYSTEMS SECTION: COMPUTERS IN MANUFACTURING
A SPECIAL ADVERTISING SECTION

JUNE 22, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

6/22/81 C 2150-2

MACHINE TOOL COMPANIES AND MATERIALS TECHNOLOGY – BLENDING FOR A PROFITABLE MIX

EQUIPMENT PRODUCTIVITY: WHY IS IT SAGGING?

METAL INDUSTRY DAY IN NEW YORK

WILLIAM J. DeLANCEY
CHAIRMAN OF AISI

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IRON AGE

VOL. 224 NO. 18

JUNE 22, 1981

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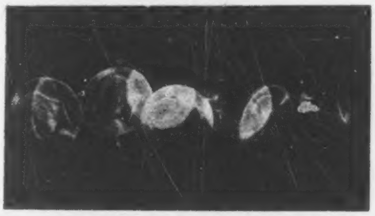


Third quarter forecast: Is the outlook still a toss of the coin?

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $80 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING ORDER TRENDS

Orders: There will be more gloom before they zoom

April was another ho-hum month for metalworking industry orders.

Probably, the best that can be said is that orders didn't fall off the plateau they had been running along for five straight months.

Dollar value of orders for durable goods (85 pct metalworking) in April came to $83.9 billion. Way back in December, they totaled $82.7 billion. In between those months, there was a mix of barely perceptive upward and downward wiggles in the orders trend.

A breakout of those orders as received by metals and metalworking industries shows a March to April decline of .8 pct. Primary metals, at $12.1 billion in April, were right where they were in March. And for the five major metalworking industry groups—electrical and nonelectrical machinery, transportation equipment, fabricated metal products and instruments—the March to April movement in orders was down a small bit in each case.

Just as nature abhors a vacuum, economics abhors a straight line. The near-straight line plateau that metalworking new orders have been on is not likely to last much longer. The big question is, of course, which way will the orders line move.

In view of current super-high interest rates—and the fact that much of metalworking is capital-intensive—it does not look like the flat orders line will be breaking out on the up side in the next few months. Too, at the same time that borrowing costs of corporate external funds are high, corporate real cash flow is less than robust.

While that situation may hold over a span of a few months, it still appears likely that an upturn will get underway before the end of the year. And, very singularly, the reason for that year-end rally lies in the slowing trend in the rate of inflation. By any measure—the consumer price index, the producer price index or the GNP deflator—inflation has been cooling.

When interest rates join the inflation-cooling movement, then the stage will be set for renewed economic growth and renewed growth in metalworking orders. High interest rates are now sustained largely by inflationary expectations. A little more wring-out of inflation, and those expectations will soften—and with them, interest rates.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	2nd Qtr.	$317.3	$310.1	$294.4
Manufacturing, Total	2nd Qtr.	126.7	121.2	115.7
Manufacturing, Durable Goods	2nd Qtr.	63.8	61.7	59.4
Mining Industry	2nd Qtr.	15.6	15.4	12.8
Key Indicators, Durable Goods Manufacturing				
New Orders	April	83.9	84.2	72.4
Shipments	April	82.8	82.1	72.2
Inventories	April	167.9	166.8	159.9
Unfilled Orders	April	285.2	284.1	275.1
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	April	22.8	23.8	22.2
Capital Goods Producers, Defense Industries	April	4.9	4.8	4.9
Primary Metals, Total	April	12.1	12.1	9.7
Steel (SIC 331)	April	6.6	6.2	4.1
Iron & Steel Castings (SIC 332)	April	1.0	1.1	1.0
Nonferrous Metals	April	4.5	4.8	4.6
Nonelectrical Mach.-Equip. Industries, Total	April	16.0	15.6	11.7
Engines & Turbines	April	1.4	1.2	1.0
Farm Machinery & Equipment (Shipments)	April	1.2	1.1	.9
Construction, Mining & Materials Hdlg. Equip.	April	3.2	3.0	2.2
General Industrial Machinery	April	1.3	1.3	.6
Fluid Power Equipment** (Index-1972=100)	April	286	282	239
Metalworking Machinery	April	.9	.8	.7
Machine Tools, Total (Millions $, Unadjusted)	April	307.6	344.7	411.9
Machine Tools, Metal-Cutting***	April	230.0	287.3	354.3
Machine Tools, Metal-Forming***	April	77.6	57.4	57.6
Electrical Mach. & Equip. Industries, Total	April	11.5	11.6	10.7
Elec. Transmission Equip. & Industrial Apparatus	April	1.6	1.9	2.0
Household Appliances	April	1.3	1.2	1.0
Communication Equipment	April	3.7	3.8	3.6
Transportation Equip. Industry, Total	April	17.5	17.7	17.5
Motor Vehicles & Parts (Shipments)	April	10.7	9.9	8.2
Aircraft, Missiles & Parts	April	5.4	5.9	8.6
Shipbuilding & Military Tanks	April	.7	.9	1.1
Fabricated Metal Products, Total	April	10.0	10.5	8.9
Instruments, Total	April	3.6	3.8	3.2

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

SKILLED MANPOWER SHORTAGE: A CRISIS FACING DEFENSE

If the U.S. were to go to war tomorrow would we have the skilled workers to meet the country's defense needs? Many businessmen don't think so.

By Edwin W. Bowers

The Reagan Administration is proposing to increase defense spending, but an alarming fact is America lacks the industrial muscle to keep up its strength.

The skilled workforce needed to sustain the machine tool and the tool and die industries is so depleted executives are calling the situation dire.

Several years ago *Iron Age* spotlighted the problem calling it "critical but not grave." Now, according to Don Atkins, president, Aero Instrument, Houston, "It's a catastrophe."

Recently Labor Secretary Raymond Donovan told Iron Age among the economy's serious shortcomings is the "critical shortage of at least 40,000 tool and die makers. That figure is expected to triple in several years." The National Tooling and Machining Association (NTMA) puts the current skilled worker shortage at closer to 60,000 and rising rapidly. NTMA President Harold Corner says that by 1985 the U.S. could be deficient in skilled metalcraft workers by about 285,000 persons. Mr. Corner is also Chief Executive Officer, C and J Industries, Meadville, Pa.

Charles P. Downer, Industrial Preparedness Representative for the National Machine Tool Builders' Association (NMTBA), testified on Capitol Hill "a problem that should be considered at this time is the ability of the American machine tool industry to respond to sudden mobilization or surge requirements." He added the machine tool industry's skilled workforce is in "short supply and those on duty are "aging."

"If there was a national emergency, and God forbid there should be," says Rick Mourey, president, WMC Grinding, Downey, Calif., "This nation would be helpless."

The tooling and machining industry sets up all production lines for all manufacturing. It is practically impossible to touch anything that is not traceable to tool and die makers, including desks, chairs, tables, typewriters, lamps, spoons. Virtually everything in our society in some way owes its existence to machining, tools and dies and molds.

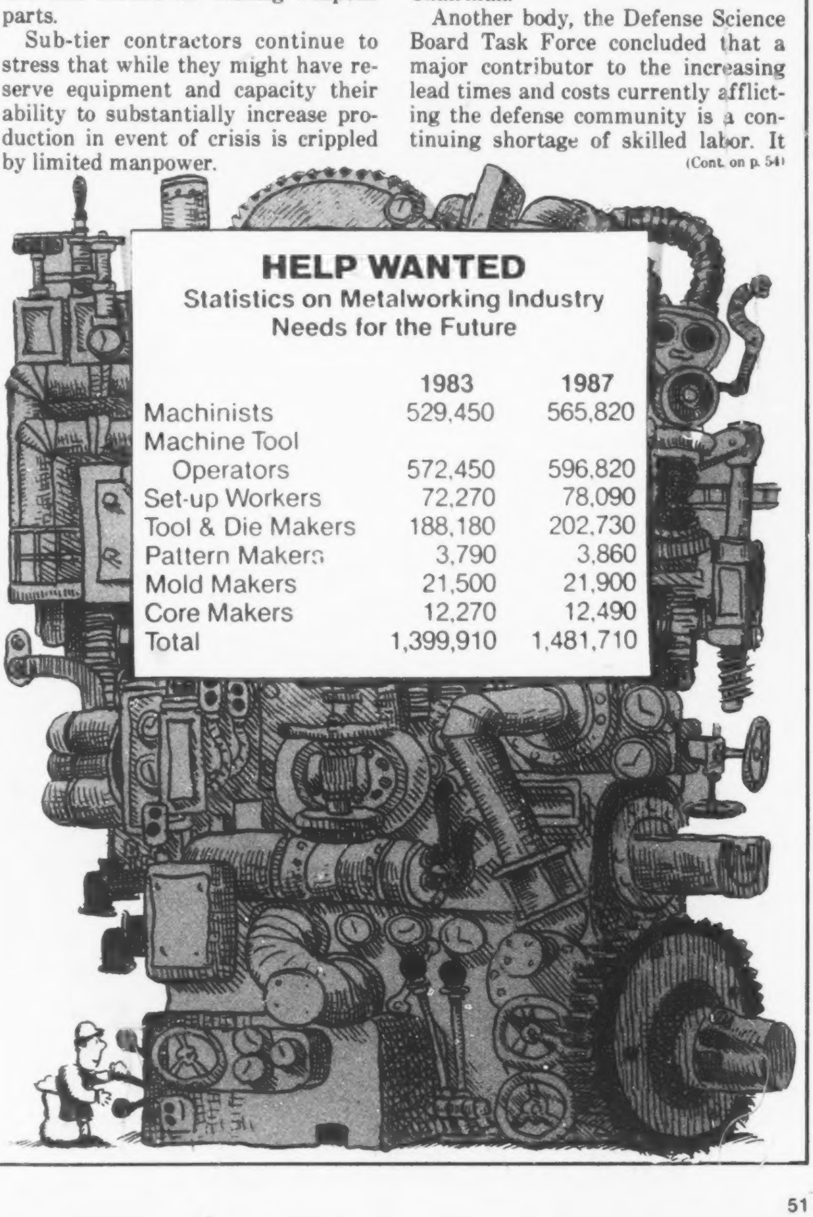
There are about 92 industries involved in defense production. But the primary contributors at the subcontractor level include the machinery sector which produces tools, molds and dies needed for making weapons parts.

Sub-tier contractors continue to stress that while they might have reserve equipment and capacity their ability to substantially increase production in event of crisis is crippled by limited manpower.

The House Armed Services Committee held extensive hearings on findings of the Defense Industrial Base Panel (DIBP). "The panel found there has been a serious decline in the nation's defense industrial capability that places our national security in jeopardy," said Richard Ichord, DIBP Chairman.

Another body, the Defense Science Board Task Force concluded that a major contributor to the increasing lead times and costs currently afflicting the defense community is a continuing shortage of skilled labor. It

(Cont. on p. 54)



HELP WANTED

Statistics on Metalworking Industry Needs for the Future

	1983	1987
Machinists	529,450	565,820
Machine Tool Operators	572,450	596,820
Set-up Workers	72,270	78,090
Tool & Die Makers	188,180	202,730
Pattern Makers	3,790	3,860
Mold Makers	21,500	21,900
Core Makers	12,270	12,490
Total	1,399,910	1,481,710

(Cont. from p. 51)

pointed out the country would be short 250,000 machinists in the next five years.

Overall, the Commerce Department says shipment potential in the tool and die industry this year is about $6.3 billion, five pct greater than 1980. For metalworking machine tools shipments could go as high as $6.1 billion in 1981, 25 pct above last year. This includes $4.7 billion for metalcutting equipment—a 13 pct gain over 1980—and $1.4 billion in metalforming machine tools, 23 pct greater than last year.

The key ingredient—manpower, is lacking. "Serious bottlenecks and choke points adversely affect the Defense Department's ability to procure military equipment in a timely, efficient and economical manner," says Prof. Gail Garfield Schwartz of Johns Hopkins University. Prof. Schwartz is also author of a book on the need to rebuild the U.S. economy.

This country at the time of World War II had a fair amount of skilled craftsmen, says Donald Mosher, a free-lance industry consultant based in Ft. Lauderdale, Fla. "Acute shortages of skilled workers started way back in the 50s when society placed a heavy emphasis on college education." He continues: "the defense and the economy, plus the future of our nation rests in the hands of the few tool makers left in the rapidly declining labor pool."

"Right now," says Aero Instrument's Mr. Atkins, "you have about 500,000 persons trying to keep 229 million people equipped with virtually everything."

Training is the critical element in any effort to remedy the situation. Several plans are being offered.

For example, the NTMA is working hard for support for legislation providing tax credits to companies who train apprentices. Sen. Orrin Hatch (R., Utah) has drafted a bill that would do that. "What would really help," Sen. Hatch told the NTMAs Washington conference, "is if we could pass an incentive bill. A measure which would provide a tax credit for training."

Iron Age has obtained a draft copy of legislation circulating on Capitol Hill that would allow a 50 pct tax credit on apprentices' wages in the first year of training and a 30 pct credit the second year.

"I like the idea of having tax credits to create jobs that your Association has proposed," Sen. Hatch told NTMA. A spokesman for the Senator's office indicated the Utah legislator would introduce and sponsor the apprentice tax credit measure. In the House of Representatives, Congressman Don Bailey (D., Pa.) has already introduced such legislation.

"I like the idea of tax credits to create jobs your Association has proposed."

Senator Orrin Hatch

Current legislation, the NTMAs Mr. Corner said, doesn't provide people adequately qualified in vocational basics to begin apprenticing in the skilled workers' area. He was referring to the Targeted Jobs Tax Credit, the Work Incentive Program and the Comprehensive Employment and Training Act (CETA). "There are really no government training incentives for skilled workers," Mr. Corner says. "We feel strongly that the government should encourage vocational education."

Mr. Mosher says most people, especially educators do not realize the extent of training required to produce a good tool and die maker. He points out an apprentice, after high school, could put in as many as 8,000 hours on-the-job training, plus about 600 hours of classroom study in related theory.

Mr. Corner stressed the industry must train its own workers. But he expressed hope the government would provide incentives for expanding the industry's training programs. "Training the highly skilled is a very expensive and time-consuming proposition," he said. "It requires a capital investment of $40,000 to $60,000 for each employee."

Aero's Mr. Atkins said he loses money during the first six months of apprentice training. "After the next six months if I've broken even that's positive. Then it takes up to a couple of years more of training before I've got a good, skilled worker in my shop. Frankly I can't afford to train, but I can't afford not to either, so I do it."

Nationwide the NTMA maintains nine metalworking institutes operated by local chapters of the organization. All nine schools have a 100 pct placement record for graduates with jobs for even some non-graduates, the Association says.

Among the most ambitious projects is a 250-person, $550,000 facility being built by the Los Angeles chapter. The L.A. group consists of about 250 member companies. "All of us are in big trouble and serious difficulty," says Deryl Craig, one of the leaders of the Los Angeles new center movement. Mr. Craig is President, California Jig Grinding Co. "We believe the new center will be a recruitment device," he says. In California alone there is currently a need for 17,000 skilled machinists he says. The new training center is expected to open in mid-September.

"The problem is how to convey to the average person how critical the need is," says WMCs Mr. Mourey. "There's a critical lack of knowledge by the public at large of the industry."

"Approximately three-fourths of our population does not know what a toolmaker or machinist is or does," says Mr. Mosher. "Most of the so-called counsellors in our high schools do not know the opportunities and requirements necessary for a highly-skilled trade in the metalworking field. An all-out effort is required to saturate the education with pertinent, factual and attractive information."

"We are a highly-skilled profession," says Mr. Mourey. "But right now if there was a national emergency, this country would be helpless."

As to the proposed "50-30" legislation, Mr. Mourey says: "I'm sure it would he helpful; the Federal government certainly should assume some of the responsibility." □

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MANAGEMENT FEATURES

GET WORKERS INTO THE ACT IF ENTITLEMENTS HOBBLE PRODUCTIVITY

Fringe benefits may be a drag on productivity unless workers turn to social incentives for efficient production in a stagnant economy.

By Charles T. Post

For thirty years, American workers, both blue and white-collared, have been savoring the benefits that go with the prosperity: Ever increasing real wages, more fringes, more paid holidays, longer vacations, more generous pensions, better health programs, and less physically onerous work.

No wonder that these workers have come to feel they are entitled to this increasing standard of living, entitled to what amounts to more money for less work!

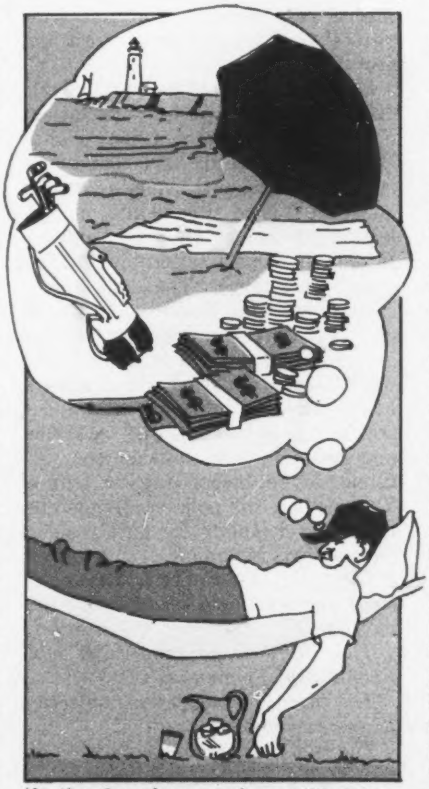
Wanting more for less is no crime when productivity keeps up. But slumping productivity spells trouble. Currently, America faces a declining national productivity/labor cost ratio. That is, the total compensation of workers is rising faster than their output of goods and services.

Simply put, because of international competition Americans cannot continue to demand more from work while producing less. And, if business can't afford more "entitlements," how can you stimulate productivity? Like narcotics, the entitlement habit is hard to break.

Under the tent of its Center for Futures Research, the University of Southern California Graduate School of Business Administration assembled support from 19 of the country's largest corporations to find the answer. A 40-page summary of the study group's preliminary findings, issue in 1979, will be succeeded later this year by a comprehensive book, *"Making America Work—Productivity and Responsibility"* by Prof. James O'Toole. Prof. O'Toole shared his findings and analysis with *Iron Age*.

The problem, as outlined by Prof. O'Toole, is complex. A turnaround wouldn't occur merely from harder work. Sound national economic policies also are needed to spur savings and investment. Nonetheless, increased capital investment is not the cure-all that it once was.

Because only 20 pct of today's labor force are production workers, attitudes and behavior often are more important factors than machines in producing productivity. This is especially true for the nearly 80 pct of the work force who are professionals, managers, and technicians, and for those in clerical, construction and sales jobs. Workers represent the ultimate key to productivity in even the most highly automated, capital intensive factories where conscientious actions by workers can save costly machine downtime.



Is the American worker entitled to more when productivity is slipping?

More effective motivation of workers would thus seem to constitute a significant, albeit not the only, response to the nation's economic ills. But herein lies a little noticed bind: Existing working conditions and incentive systems are predicated on economic growth. But what if there is insufficient growth to finance the increasing levels of compensation to which workers have come to feel entitled?

"The only way to change a company's or a nation's productivity/labor ratio," Prof. O'Toole says, "is to alter the entire collection of fringe benefits/incentive schemes/working conditions. These conditions have to make it in the self interest of workers to improve the ratio. . . ."

Prof. O'Toole places considerable stock on various schemes which have been tried by small, innovative firms. The challenge is to translate these for application in large corporations. Fringe benefits have become a major cost of doing business. They amount to over 14 pct of total labor costs for organized workers, and 43 pct for large producers of primary metals and chemicals.

Labor is not the only factor in productivity, of course. A great part of the problem is caused by the oft-noted decrease in America's savings rate and capital investment rate relative to our competitors.

The decreasing productivity/labor cost ratio can also be explained by the rapid influx of "marginal" workers into the American labor force. Importantly, what makes these workers (youth, women, minorities) "marginal" is not that they are lazy or untrained, but that they have different work values and expectations. This suggests that America has an inappropriate philosophy and organiza-

Productivity Drops, Wage Rates Climb

Annual levels, 1977 = 100 Durables Manufacturing

	Output Per Hr of All Persons (Productivity)	Hourly Compensation	Unit Labor Costs
1975	92.2	85.6	92.9
1976	97.5	92.5	94.9
1977	100.0	100.0	100.0
1978	101.0	107.8	106.7
1979	100.7	118.3	117.5
1980	99.2	131.3	132.3

Source: BLS

tion of work for an era of declining growth—a mismatch between the philosophy and organization at work on the one hand, and economic reality on the other.

"Symptoms of the mismatch already abound: High inflation, low productivity, declining innovation, a drop in the relative value of the dollar, and the increasing export of jobs to foreign competitors. While this mismatch is not the simple proximate cause of the symptoms, it is a major contributing factor to them all, "Prof. O'Toole goes on to say, "We assume the next decade will not see any real increase in the growth of the gross national product. No decrease, either, for this is not a doomsday scenario; rather it incorporates trends the nation has grown accustomed to over the past few years. Things will get a little worse with time.

The next decade will witness slightly higher inflation and interest rates, much higher energy prices, lower corporate profits, more debt, less saving, less investment—all for the same interrelated reasons that such conditions exist today. Even if national economic policies are shaped to encourage more investment, the short term effect will be painful from the point of view from the average worker."

Underlying America's economic problems of the 1980's, Prof. O'Toole sees deep and massive movements along a societal fault line, including (1) changes in demographics that have brought into the workforce a generation of young workers whose prime social experience has been the trauma of the Vietnam era: (2) changes in the family that have forever altered the relationship of men and women and have brought millions of women into the workforce with a heightened sense of what is their due; and (3) radical changes in society in general that have altered the nature of what is acceptable authority in all institutions, including workplaces. These and other changes in social values have led to new expectations about work, expectations that managers have thus far been unable to meet. The managerial challenge of the 1980s is to create a philosophy and organization of work that is responsive to the underlying shifts in social values and expectations.

Change, he notes, is particularly difficult because worker expectations have been transformed into rights. Most personal needs have been translated into social entitlements.

"While it is possible to alter a privilege, rights are by definition guaranteed, inalienable, unalterable, and forever," he observes. The epicenter of entitlement consciousness is centered in the Baby Boom generation. Some of the things to which these young workers feel entitled are pensions, health care, cost of living allowances, frequent paid holidays and vacations, and generous benefits when they are unemployed, according to Daniel Yankelovich, the pollster. Meanwhile, there are demands for purely social entitlements including:

The right to blow the whistle on illegal and unethical practices of employers.

The right to privacy (e.g., confidentiality of personnel files).

The right to conscientious objection to unethical orders.

The right to freedom in outside activities (e.g., political activities).

The right to sexual freedom (e.g., homosexual rights).

The right to freedom from sexual harassment by superiors.

The right to vote on plant relocations.

The right to participate in all decisions directly affecting one's job.

The right to self-actualization on the job (i.e., the right to develop one's full productive potential).

The right to reject a cross country transfer.

The right of all employees to full access to information about corporate activities.

The USC researcher goes on to say that "the problem with the current state of work in America is not, then simply the rising cost of entitlements. Rather, the problem is the social cost of entitlements that are demanded and granted without the productive where-with-all to afford them. The problem, then, is not simply workers who have too little commitment to their jobs. Rather, the problem is the current organization and philosophy of work that does not tie responsibilities to rights.

"Nor is the problem simply that the values of young workers are 'bad' from the perspective of organizational needs. In fact, the dominant values of young workers may be more appropriate to the economic challenges of the 1980's than are the values of their parents." Prof. O'Toole characterizes the values of the Boom Babies: change, flexibility, choice, options, variety, and diversity.

"It's a shame" he says "that the current organization and philosophy of work does not tap the positive values and traits of young workers."

The original question pops up again: How does one motivate workers in an era of declining growth? How does one encourage workers to take responsibility for the quantity and quality of their work?

The author comes up with one broad conclusion:

Workers are not all alike. They have different needs, interests, and motivations. Moreover, these characteristics constantly change over the career of each worker. With diverse values, no single set of working conditions is appropriate for all workers or even for one worker during the course of his or her career.

The futurist suggests possible performance criteria for the organization of work:

Diversity: A productive workplace would offer a wide range of tasks, each requiring different levels of skills, abilities, effort, a degree of commitment, supervision, creativity, and length of time for completion.

There also would be a spectrum of rewards and incentives.

Choice: A productive workplace would make it possible for workers themselves, to select jobs that meet their individual needs.

Flexibility: A productive workplace would accommodate differences in the off-the-job commitments and interests of workers. To meet various levels of family responsibilities, working conditions and career paths would be individually tailored as far as practically possible.

Mobility: A productive workplace would provide the opportunity for workers to move to other organizations, within limits, without penalty.

Participation: A productive workplace would provide workers with full information and authority to manage their own jobs. Workers would design their own jobs, set their own work schedules, decide their own salaries, indeed be fully self-managing as far as their own work went, and to the extent that it did not affect anyone else's work.

Workers would also participate in profits and ownership of stock in the companies in which they work.

Rights tied to responsibilities: As a necessary corollary to these particular criteria a productive workplace would be one in which every individual was held responsible for all decisions he makes or actions he takes.

Security: A productive workplace would be one in which managers planned for full employment. This is not to say that workers would have academic style tenure.

Prof. O'Toole is candid in saying that these criteria appear exceptionally radical. He grants that it is difficult to imagine a workplace that would satisfy these factors and still be profitable and productive. He answers this objection by stating that no one organization could perfectly satisfy all these criteria. Not only is the work force diverse, but places of employment also vary in size, location, technology, the products they make, the services they provide, and many other significant variables. But, for every organization, he contends there is a spectrum of appropriate conditions that would meet the established criteria.

From the standpoint of management, he says, "Realistically managers can be expected to demand evidence that the changes advocated will not only increase productivity, but will also not seriously compromise their authority."

To demonstrate the diversity of problems and solutions, Prof. O'Toole reviews the case histories of some 35 industrial firms which have adopted, in one form or another, plans for worker participation in the management and/or ownership. These include such well known metalworking case histories as Lincoln Electric, South Bend Lathe, Pratt & Whitney, Jones & Laughlin, and others. Not all these plans have been permanently successful, he acknowledges.

"The most successful and lasting workplace reforms have not started as small scale experiments that were then diffused throughout large organizations. Rather the reforms that have taken hold and lasted have involved systemic, total organizational change. Not surprising, then, is the fact that work reform has succeeded in only a miniscule number of large organizations."

One development of the 1970's has grown and prospered into the 1980's: Between 1974 and 1978, the number of Americans with flexible working schedules more than doubled.

A few progressive large corporations are engaged in an effort to provide individual workers with the choice among, and mobility between, a spectrum of different kinds of jobs. In firms like Polaroid, there is now some experimentation with methods to assess the various rewards, demands, and challenges of jobs; to assess the interests, needs, and desires of workers; and to let workers select jobs that meet their needs. The company facilitates the process by providing training, placement, and other career services.

Other innovative approaches include Xerox's sabbatical program for workers who wish to spend a year doing public service. More programs pop up every day. The 70 employees of Romac Industries vote on one another's raises. An Oakland, Calif., appliance store goes this one better: Employees not only set their own salaries, but also decide what hours they will work, when they will take vacations, and for how long, and even borrow money from petty cash without permission.

Many companies pick up tuition charges for continuing education. Dana Corp. runs its own "Dana University" which is attended and taught by Dana employees—blue collar as well as white collar. The company

USC Heads Research into Social Change

The University of Southern California's Center for Futures Research describes itself as "dedicated to research into the fundamental causes and directions of social change and the options available to improve the quality of life of present and future generations."

Put more bluntly, the Center conducts long-range multi-disciplinary planning sponsored by about 60 large firms and foundations. It operates under the aegis of the U.S.C. Graduate School of Business Administration.

Each study conducted by the Center tries to incorporate the views of people with different kinds of perspectives, different backgrounds and attitudes. The foundation study on "Employment Entitlements in the '80's," for instance, was prepared by an economist, a psychologist, and a social anthropologist.

Dr. James O'Toole, whose views are reflected in this article, is a senior research associate at the Center and associate professor of management and policy sciences at the U.S.C. Graduate School of Business Administration. He has a doctorate in social anthropology from Oxford University, where he was a Rhodes Scholar.

Change is particularly difficult because worker expectations have been transformed into rights.

Dr. James O'Toole

also makes managerial information available to all workers as part of its Scanlon Plan, the widespread system by which workers participate in productivity improvement and share in the gains.

While there sometimes are union problems, a few companies pay their workers for the work they complete, not for the hours spent on a job. When a worker has completed his task, he may leave or continue on his job and earn overtime.

More and more workers formerly paid by the hour now receive annual salaries. Avon Products, Gillette, Black & Decker, and Polaroid, are listed among these.

Employers who have problems with worker abuse of the sick-leave privilege, which has come to be defined as a right, are watching "sick-leave banks." The bank permits employees to pool their sick leave days in a common fund. This is available to workers who, because of extensive real illness, have used up all the time off to which they are entitled. While such a pool is an attractive benefit to workers, it also creates peer pressure not to abuse it. Worker committees must approve all "loans" from the fund and often require recuperated workers to pay back days before they become eligible for another "withdrawal" period.

Another inducement to reduce absenteeism is to provide "well pay." Workers who are neither late nor absent for a full month may receive an extra eight hours' wages, for instance. One company shares with its workers savings in workman's compensation premiums if accidents are reduced.

Possibly no aspect of Japanese industrial productivity is receiving more attention in the United States today than quality control circles. In 1980, approximately 50 American companies had recently established these circles. Although there are many variations, essentially quality control circles are study groups of about 10 workers each. These meet regularly—and sometimes on the spur of the moment—to discuss and solve productivity problems related to their common work. They are led by workers, but receive staff assistance from management. Participation is voluntary. In Japan, approximately 90 pct of all workers participate.

In addition to flextime, some firms have established regular permanent programs of part time work. Several firms offer "mothers' hours," possibly from 9:30 a.m. to 2:30 p.m. Control Data Corp. goes one step further and operates a 3 hr shift in the afternoon for students after the mothers have gone home. The idea is dampened by fixed labor costs, such as training, fringe benefits, record keeping, and payroll taxes that are identical whether an employee works full or part time.

In some occupations, job sharing is possible. Pitney-Bowes offers employment in which two women can share a production job, leaving one free to be with her children in the morning, and the other free to be with her children in the afternoon. Various forms of job sharing generally reflect a regional or occupational labor shortage, such as in high technology manufacturing.

Leisure sharing, by contrast, is a measure frequently invoked to prevent layoffs. In a California municipality, the employees' union approved a program which would give workers the following options:

Workers are not all alike. They have different needs, interests and motivations.

1. Giving up 5 pct of their annual income in exchange for 10½ additional vacation days.

2. Giving up 10 pct of their annual income for 21 additional vacation days.

3. Giving up 20 pct of annual income for 42 additional days.

Prof. O'Toole contends that workers will behave more responsibly if they assume the risks that go with their own freely chosen behavior. With such risks goes the need for workers to receive a fair share of the financial gains that result from increases in productivity. One way for workers to assume risk is through partial or full ownership.

The history of worker capitalism is strewn with failures. The substance, rather than the form, of ownership appears to be the critical factor. The effects on employee morale, motivation, and productivity appear to be the most positive when:

(1) ownership is direct;

(2) ownership is widespread rather than limited to managers or sophisticated workers;

(3) ownership is broadly held with all workers having significant, not just nominal, equity.

In short, the more worker ownership in a company, the better. Secondly, worker owners need to assume all the responsibilities of self management that the right of ownership entails. These include all the positive and negative consequences of success or failure of the enterprise.

Prof. O'Toole cites evidence that when people are actual owners of a company, they act with impressive productivity. A USC study shows that privately held firms have three times the average income as a percentage of sales, as publicly held firms, and that their return on assets is 12 pct greater.

A substantial question remains, however, as to whether today's workers are capable of taking control, let alone responsibility. This may account for the earlier observation that work place innovations generally were more successful in small firms than in large ones. If the contrast between line and staff duties is more clearly drawn in the larger firms and the specialization in the work place more carefully honed, the flexibility of the employee may be correspondingly limited.

Prof. O'Toole observes, "Most of the difficult problems that people encounter at work are not technical—the computer can solve those."

But, with the computer everywhere, in the paper mountains of the front office as well as on the production line, who is going to talk to the computer?

The professor holds that "the success or failure of American enterprise will rest on the willingness and ability of workers to take the initiative in those increasingly frequent situations that cannot be routinely handled. This means that workers will have to take responsibility for the welfare of customers, suppliers, and fellow workers—they will have to care about their work."

Yet, he warns, "People who are vocationally trained to unquestioningly perform a single task are manifestly unprepared to design their own work, participate in decision making, assume control over their own working conditions, work as members of a community of equals, or take responsibility for the quantity and quality of their own work when a boss is not looking over their shoulders. Like narrowly trained managers, these workers feel easily threatened by change and act defensively, inflexibly, and in ways society deems irresponsible when circumstances require them to adapt." □

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EFFECTIVE JUNE 1, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	271	293	300	285
Buffalo	68	81	68	64
Pittsburgh	442	442	485	443
Youngstown	131	143	139	137
Cleveland	170	175	174	159
Detroit	159	158	181	193
Chicago	641	669	615	566
Cincinnati	113	113	104	125
St. Louis	89	101	102	79
Southern	259	250	272	266
Western	147	160	160	156
U.S. Production	2,490	2,585	2,600	2,473

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective June 1, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,490	2,585	54,501	51,387
Capability Utilization Rate	83.2	86.4	85.0	80.7

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 3/29/81)	23.776	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 89.17	$ 92.50	$ 99.83	$ 93.83
No. 2 bundles	$ 62.17	$ 64.83	$ 73.83	$ 60.83

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$ 99.50	$101.50	$108.50	$ 99.50
No. 1 steel, Philadelphia	79.50	84.50	88.50	91.50
No. 1 steel, Chicago	88.50	91.50	102.50	90.50
No. 1 bundles, Detroit	91.50	98.50	108.50	95.50
Low Phos., Youngstown	99.50	101.50	109.50	108.50
No. 1 mach'y cast., Pgh.	99.50	99.50	104.50	96.50
No. 1 mach'y cast., Phila.	117.50	119.50	121.50	127.50
No. 1 mach'y cast., Chi.	122.50	129.50	127.50	137.50

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*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective June 1, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	82.65-85.00	82.40-85.00	6/ 1/81
Lead	36.00-38.00	38.00	5/ 5/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C): cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be.	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$483.25
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$10.65
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

May 25—570.23
May 26—566.96
May 27—563.19
May 28—564.02
May 29—566.76

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80	71¼
Yellow brass	69⅝	64½
Red brass	74⅝	68⅛
Comm. bronze	76⅛	69⅛
Mang. bronze	68⅝	66⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	62
Light copper	53
No. 1 composition	71
No. 1 comp. turnings	69
Hvy. yellow brass solids	44
Hvy. yellow brass turnings	32
Radiators	54

Aluminum

New mixed clips	36	—37
Old sheet	33	—34
Old cast	33	—34
Clean dry borings	34	—35

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	43	—44
No. 1 composition	58	—59
No. 1 composition turn'gs	56	—57
Cocks and faucets	41	—42
Clean heavy yellow brass	36	—37
Brass pipe	41	—42
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE JUNE 1, 1981

MATERIALS NEWSFRONT

(Effective June 1, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to $100.00
No. 2 hvy. melting	89.00 to 90.00
No. 1 dealer bundles	115.00 to 116.00
No. 1 factory bundles (auto)	118.00 to 119.00
No. 2 bundles	67.00 to 68.00
No. 1 busheling	113.00 to 114.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	44.00 to 45.00
Cast iron borings	43.00 to 44.00
Low phos. punchings plate	119.00 to 120.00
Heavy turnings	89.00 to 90.00
No. 1 RR hvy. melting	111.00 to 112.00
Rails, 2 ft. and under	118.00 to 119.00
Scrap rails, random lgth.	100.00 to 101.00
RR specialties	114.00 to 115.00
No. 1 machinery cast	99.00 to 100.00
Cupola cast	92.00 to 93.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	720.00 to 725.00
18-8 turnings	615.00 to 620.00

Chicago

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	97.00 to 98.00
No. 1 factory bundles (auto)	109.00 to 110.00
No. 2 dealer bundles	64.00 to 65.00
Unburned bundles	57.00 to 58.00
No. 1 busheling	92.00 to 93.00
Shredder scrap	91.00 to 92.00
Machine shop turn.	45.00 to 46.00
Mixed bor. and turn.	47.00 to 48.00
Shoveling turnings	50.00 to 51.00
Cast iron borings	67.00 to 68.00
Low phos. forge crop	114.00 to 115.00
Low. phos. punchings plate ¼ in. and heavier	123.00 to 124.00
Low phos. 2 ft. and under	116.00 to 117.00
No.1 RR hvy. melting	92.00 to 93.00
Scrap rails, random lgth.	89.00 to 90.00
Reroller rails	119.00 to 120.00
Rails, 2 ft. and under	119.00 to 120.00
RR couplers and knuckles	115.00 to 116.00
RR car axles	169.00 to 170.00
No. 1 machinery cast	122.00 to 123.00
Cupola cast	104.00 to 105.00
Stove plate	99.00 to 100.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	685.00 to 695.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	105.00 to 108.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	102.00 to 105.00
Shredder scrap	87.00 to 90.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	55.00 to 58.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	101.00 to 103.00
Low phos. 2 ft. punchings	117.00 to 120.00
Electric furnace bundles	117.00 to 120.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	121.00 to 124.00
Cupola cast	78.00 to 81.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to $ 72.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	47.00 to 48.00
No. 1 busheling	89.00 to 90.00
Drop forge flashings	69.00 to 70.00
Machine shop turn.	42.00 to 43.00
Mixed borings and turn.	37.00 to 38.00
Shoveling turnings	42.00 to 43.00
Cast iron borings	46.00 to 47.00
Heavy breakable cast	64.00 to 65.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	106.00 to 107.00
Stainless	
18-8 bundles and solids	650.00 to 660.00
18-8 turnings	510.00 to 520.00
430 bundles and solids	145.00 to 155.00

Youngstown

No. 1 hvy. melting	$ 96.00 to $ 97.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 dealer bundles	60.00 to 61.00
Machine shop turnings	22.00 to 23.00
Shoveling turnings	36.00 to 37.00
Low phos. plate	99.00 to 100.00
Electric furnace bundles	99.00 to 100.00
Galvanized bundles	85.00 to 86.00

Cleveland

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	60.00 to 61.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles	114.00 to 115.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	26.00 to 27.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	26.00 to 27.00
Cut structural & plates, 2 ft. and under	120.00 to 121.00
Low phos. punchings plate	120.00 to 121.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	91.00 to 92.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	124.00 to 125.00
Rails, 18 in. and under	125.00 to 126.00
Steel axle turnings	71.00 to 72.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	575.00 to 585.00
18-8 turnings	450.00 to 475.00
430 bundles	125.00 to 135.00

Buffalo

No. 1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 89.00 to $ 90.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	92.00 to 93.00
No. 2 bundles	70.00 to 71.00
No. 1 busheling	91.00 to 92.00
Shredder scrap	101.00 to 102.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	42.00 to 43.00
Electric furnace bundles	93.00 to 94.00
Elec. furnace, 3 ft. & under	82.00 to 83.00
Structural and plate, 2 ft.	109.00 to 110.00
Structural and plate, 4 ft.	103.00 to 104.00
No. 1 RR hvy. melting	93.00 to 94.00
Scrap rails, random lgth.	88.00 to 89.00
Rails, 18 in. and under	110.00 to 111.00
Angles and splice bars	102.00 to 103.00
No. 1 cupola cast	100.00 to 101.00
Unstripped motor blocks	72.00 to 73.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to $ 77.00
No. 2 hvy. melting	73.00 to 74.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	25.00 to 26.00
Low phos. 18 in. and under	118.00 to 119.00
Rails, random length	80.00 to 81.00
Rails, 2 ft. and under	103.00 to 104.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 48.00 to $ 49.00
No. 2 hvy. melting	43.00 to 44.00
No. 2 dealer bundles	40.00 to 42.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	54.00 to 56.00
No. 1 dealer bundles	78.00 to 80.00
No. 2 bundles	32.00 to 34.00
No. 1 busheling	72.00 to 74.00
Shredder scrap	73.00 to 75.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	58.00 to 60.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 61.00 to $ 63.00
No. 2 hvy. melting	53.00 to 55.00
No. 1 dealer bundles	48.00 to 50.00
No. 2 dealer bundles	33.00 to 35.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 61.00 to $ 63.00
No. 2 hvy. melting	51.00 to 53.00
No. 1 dealer bundles	48.00 to 50.00
No. 2 dealer bundles	31.00 to 33.00
Machine shop turn.	12.00 to 14.00
Shoveling turnings	17.00 to 19.00
Cast iron borings	12.00 to 14.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 91.00 to $ 93.00
No. 2 hvy. melting	80.00 to 82.00
No. 2 bundles	67.00 to 69.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 88.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	88.00
No. 2 bundles	66.00
Mixed steel scrap	70.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	73.00
Machine shop turn.	40.00
Short steel turn.	48.00
Mixed bor. and turn.	39.00
Cast scrap	65.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	86.00 to 88.00
No. 2 bundles	57.00 to 58.00
Machine shop turn.	17.00 to 19.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	112.00 to 113.00
Unstripped motor blocks	79.00 to 81.00
Cupola cast	95.00 to 97.00

EFFECTIVE JUNE 8, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	255	271	307	282
Buffalo	67	68	84	61
Pittsburgh	444	442	473	444
Youngstown	134	131	154	119
Cleveland	181	170	161	161
Detroit	175	159	173	191
Chicago	637	641	633	557
Cincinnati	104	113	94	117
St. Louis	95	89	93	91
Southern	245	259	265	265
Western	150	147	151	152
U.S. Production	2,487	2,490	2,588	2,440

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective June 8, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,487	2,490	56,988	53,222
Capability Utilization Rate	83.1	83.2	84.9	79.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	23.776	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 89.17	$ 89.17	$ 96.50	$ 80.83
No. 2 bundles	$ 62.17	$ 62.17	$ 71.17	$ 55.17

Scrap Comparison (Gross Ton)

No. 1 steel, Pittsburgh	$ 99.50	$99.50	$106.50	$ 86.50
No. 1 steel, Philadelphia	79.50	79.50	84.50	85.50
No. 1 steel, Chicago	88.50	88.50	98.50	70.50
No. 1 bundles, Detroit	91.50	91.50	98.50	71.50
Low Phos., Youngstown	96.50	99.50	101.50	83.50
No. 1 mach'y cast., Pgh	99.50	99.50	104.50	92.50
No. 1 mach'y cast., Phila.	117.50	117.50	119.50	120.50
No. 1 mach'y cast., Chi	124.50	122.50	127.50	126.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective June 8, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	81.80-85.00	83.95-85.00	6/ 8/81
Lead	38.00	36.00-38.00-	6/ 3/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$460.00
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$420-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz	$140
Platinum, per troy oz	$475
Rhodium, per troy oz	$700.00
Silver ingots, per troy oz	$10.00
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

June 1—568.26	June 4—565.84
June 2—565.47	June 5—563.30
June 3—Holiday	

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	80	71¼
Yellow brass	69⅝	64½
Red brass	74⅝	68⅛
Comm. bronze	76⅛	69⅛
Mang. bronze	68⅝	66⅞
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70	
No. 2 copper wire	61	
Light copper	52	
No. 1 composition	70	
No. 1 comp. turnings	68	
Hvy. yellow brass solids	43	
Hvy. yellow brass turnings	31	
Radiators	53	
Aluminum		
New mixed clips	36	—37
Old sheet	32	—33
Old cast	32	—33
Clean dry borings	34	—35

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	43	—44
No. 1 composition	58	—59
No. 1 composition turn'gs	56	—57
Cocks and faucets	41	—42
Clean heavy yellow brass	36	—37
Brass pipe	41	—42
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE JUNE 8, 1981

MATERIALS NEWSFRONT

(Effective June 8, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to	$100.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	118.00 to	119.00
No. 2 bundles	67.00 to	68.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	19.00 to	20.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	43.00 to	44.00
Low phos. punchings plate	117.00 to	118.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	111.00 to	112.00
Rails, 2 ft. and under	118.00 to	119.00
Scrap rails, random lgth.	100.00 to	101.00
RR specialties	114.00 to	115.00
No. 1 machinery cast	99.00 to	100.00
Cupola cast	92.00 to	93.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	710.00 to	715.00
18-8 turnings	610.00 to	615.00

Chicago

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles (auto)	109.00 to	110.00
No. 2 dealer bundles	64.00 to	65.00
Unburned bundles	57.00 to	58.00
No. 1 busheling	92.00 to	93.00
Shredder scrap	91.00 to	92.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	67.00 to	68.00
Low phos. forge crop	114.00 to	115.00
Low. phos. punchings plate ¼ in. and heavier	123.00 to	124.00
Low phos. 2 ft. and under	116.00 to	117.00
No.1 RR hvy. melting	92.00 to	93.00
Scrap rails, random lgth.	89.00 to	90.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	119.00 to	120.00
RR couplers and knuckles	115.00 to	116.00
RR car axles	169.00 to	170.00
No. 1 machinery cast	124.00 to	125.00
Cupola cast	104.00 to	105.00
Stove plate	99.00 to	100.00
Steel car wheels	108.00 to	109.00
Stainless		
18-8 bundles and solids	685.00 to	695.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to	$ 81.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	104.00 to	107.00
No. 2 dealer bundles	53.00 to	56.00
No. 1 busheling	99.00 to	102.00
Shredder scrap	85.00 to	88.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	54.00 to	57.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	97.00 to	100.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	117.00 to	120.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	118.00 to	121.00
Cupola cast	78.00 to	81.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to	$ 72.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	89.00 to	90.00
Drop forge flashings	69.00 to	70.00
Machine shop turn.	38.00 to	39.00
Mixed borings and turn.	37.00 to	38.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	42.00 to	43.00
Heavy breakable cast	64.00 to	65.00
Mixed cupola cast	79.00 to	80.00
Automobile cast	106.00 to	107.00
Stainless		
18-8 bundles and solids	660.00 to	670.00
18-8 turnings	510.00 to	520.00
430 bundles and solids	145.00 to	155.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 dealer bundles	58.00 to	59.00
Machine shop turnings	22.00 to	23.00
Shoveling turnings	36.00 to	37.00
Low phos. plate	96.00 to	97.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	83.00 to	84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	106.00 to	107.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	25.00 to	26.00
Mixed bor. and turn.	25.00 to	26.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	25.00 to	26.00
Cut structural & plates, 2 ft. and under	120.00 to	121.00
Low phos. punchings plate	120.00 to	121.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	91.00 to	92.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	124.00 to	125.00
Rails, 18 in. and under	125.00 to	126.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	90.00 to	91.00
Structural and plate, 2 ft. and under	98.00 to	99.00
Rails, 2 ft. and under	76.00 to	77.00
Scrap rails, random lgth.	56.00 to	57.00
No. 1 machinery cast	96.00 to	97.00
No. 1 cupola cast	64.00 to	65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 89.00 to	$ 90.00
No. 2 heavy melting	80.00 to	81.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	90.00 to	91.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	41.00 to	42.00
Electric furnace bundles	92.00 to	93.00
Elec. furnace, 3 ft. & under	80.00 to	81.00
Structural and plate, 2 ft.	109.00 to	110.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	92.00 to	93.00
Scrap rails, random lgth.	87.00 to	88.00
Rails, 18 in. and under	112.00 to	113.00
Angles and splice bars	102.00 to	103.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	70.00 to	71.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	66.00 to	67.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	22.00 to	23.00
Cast iron borings	22.00 to	23.00
Low phos. 18 in. and under	107.00 to	108.00
Rails, random length	80.00 to	81.00
Rails, 2 ft. and under	103.00 to	104.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	54.00 to	56.00
No. 1 dealer bundles	78.00 to	80.00
No. 2 bundles	32.00 to	34.00
No. 1 busheling	72.00 to	74.00
Shredder scrap	73.00 to	75.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	58.00 to	60.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 57.00 to	$ 59.00
No. 2 hvy. melting	49.00 to	51.00
No. 1 dealer bundles	44.00 to	46.00
No. 2 dealer bundles	29.00 to	31.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 55.00 to	$ 57.00
No. 2 hvy. melting	45.00 to	47.00
No. 1 dealer bundles	42.00 to	44.00
No. 2 dealer bundles	25.00 to	27.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to	118.00
No. 1 cupola cast	122.00 to	124.00

Seattle

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	66.00 to	68.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	81.00
Bush. new fact. unprep'd.	70.00
Machine shop turn.	43.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	88.00
No. 2 bundles	57.00 to	58.00
Machine shop turn.	17.00 to	19.00
Crushed turnings	40.00 to	42.00
Shredder scrap	95.00 to	97.00
Cut structural plate 2 ft. and under	112.00 to	113.00
Unstripped motor blocks	79.00 to	81.00
Cupola cast	95.00 to	97.00

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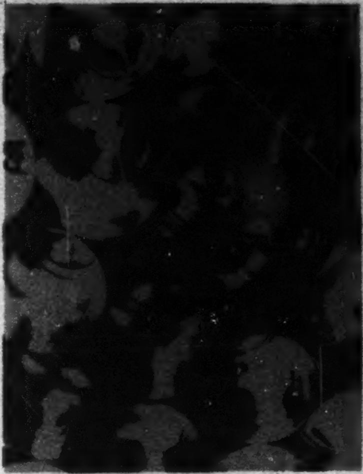
IRON AGE

VOL. 224, NO. 19

JULY 6, 1981



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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $80 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING PRICE TRENDS

Lower prices are fine, but at what cost?

Producer prices in May continued to signal hopeful news.

The Labor Dept.'s Producer Price Index rose by only .4 pct over the April level. That was only half as large as the April advance and was the smallest increase so far this year.

And prices of metalworking industry products in May moved right along with the overall producer price trend. In May, for the first time this year, the average month-to-month price increase for the 23 key metalworking product lines shown on the table here was under 1 pct.

On a year-to-year basis, metalworking's average prices in May were up 10.1 pct. This was below an 11 pct-plus average for the December-March period.

When this news of easing of producer price advances is viewed in light of a concurrent cooling of consumer prices and of the GNP price deflator, then there is reason for real hope in the battle against inflation.

Still, nobody is yet talking about a price turndown. At this stage, it is just a matter of watching hopefully as inflation's rate of climb slows down a bit.

There were hefty price hikes in May for some metalworking product lines that served as a reminder that inflation is still very much on the scene. Prices for industrial material handling equipment went up 2.2 pct from April. That's an annual rate of more than 25 pct.

Another big price hike came in heavy motor trucks. This shows that raising of price tags for a product sometimes has little to do with how well sales of that product are doing.

In May, month-to-month price increases for 18 of the 23 metalworking product lines listed on the table here amounted to less than .3 pct. No price analyst, a few months back, would have dared make a guess that prices in May could be held down to that extent.

Of course, the news on price cooling in the March to May period is not all good news. After all, it was a slowing of business activity that had much to do with price cooling in that period.

The question on just about everyone's mind right now is what is the price—in terms of a business slowdown—that will have to be paid to get lower prices throughout the economy. ☐

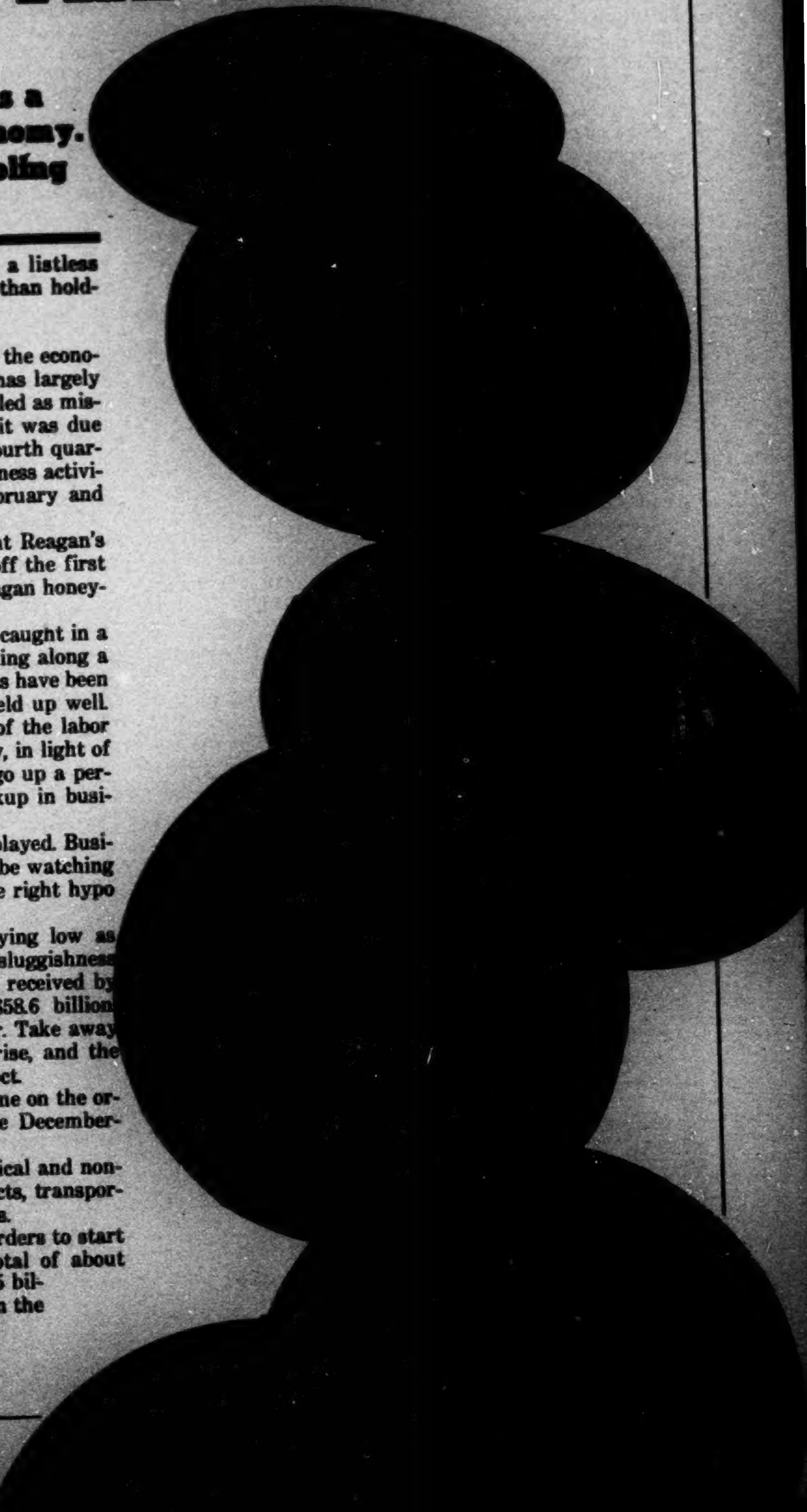
Latest Month Covered: May, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	341.9	+ .2	+ 9.5
Metal Forming Machine Tools	378.6	+ .4	+10.3
Agricultural Machinery & Equip.	284.4	+ 1.1	+10.9
Construction Machinery & Equip.	318.3	+ 1.1	+11.3
Special Industry Mach. & Equip.	307.4	+ 1.2	+12.6
Industrial Process Furnace & Ovens	330.5	+ .7	+12.1
Industrial Material Handling Equip.	276.8	+ 2.2	+ 9.6
Pumps, Compressors & Allied Equip.	319.8	+ 1.2	+12.1
Fluid Power Equip.	219.6	+ 1.5	+10.9
Mechanical Power Transmission Equip.	291.2	+ .7	+11.6
Automobiles	204.5	+ 1.2	+ 9.9
Motor Trucks—Light	248.7	+ .9	+15.8
Motor Trucks—Heavy	275.8	+ 2.1	+11.8
Railroad Equipment	337.1	−1.4	+ 8.6
Fabricated Metal Structural Products	294.3	+ .3	+ 9.0
Electric Motors	269.9	+ .1	+ 8.6
Valves & Fittings	308.3	+ .2	+ 6.6
Ball & Roller Bearings	293.3	NC	+10.8
Cutting Tools Accessories	256.4	+ .3	+ 9.5
Heating Equipment	221.7	+ 1.3	+ 8.7
Plumbing Fixtures & Brass Fittings	265.6	+ .2	+ 7.3
Metal Containers	314.1	NC	+ 3.8
Miscellaneous Metal Products	270.6	+ .9	+ 9.7

Data based on U.S. Labor Dept.'s Producer Price Index

QUARTERLY FORECAST

IS THE OUTLOOK STILL A TOSS OF THE COIN?



A coin-flip might do as well as a forecast for the bouncing economy. The big promise now is in cooling prices.

Many metalworking industries, caught in a listless economy, are currently doing little more than holding their own.

Some few are doing surprisingly well.

The bright promise of the first quarter, when the economy grew at a super-solid 8.4 pct annual rate, has largely faded. In retrospect, that big jump is being labeled as misleading. Even Administration spokesmen say it was due largely to "momentum carried over from the fourth quarter of last year." They point out that while business activity held up well in January, it fell off in February and March.

Murray Weidenbaum, chairman of President Reagan's Council of Economic Advisers, has shrugged off the first quarter surge as sort of a last fling of the "Reagan honeymoon."

The economy does not appear to be actually caught in a recessionary slide; it seems mostly to be running along a plateau. Fortunately, it is a high plateau. Plants have been kept reasonably busy and employment has held up well. The rise in unemployment in May to 7.6 pct of the labor force was widely predicted. Just as predictably, in light of continuing sluggish economic growth, it will go up a percentage point or more before a year-end pickup in business activity leads to worker recalls.

There is the sense of a waiting game being played. Business executives and consumers alike seem to be watching and waiting as Washington wrangles over the right hypo to give that listless patient, the U.S. economy.

Metalworking industries generally, are laying low as this double-barrel waiting game and cyclical sluggishness grips the economy. For example, new orders received by metalworking industries in April totaled $58.6 billion. That was up only 2.3 pct from last December. Take away price hikes from that small dollar volume rise, and the real gain over the 4-month period came to .4 pct.

Scattered evidence gathered in May and June on the orders trend indicates the sluggishness of the December-April period is continuing.

The orders in question are those for electrical and nonelectrical machinery, fabricated metal products, transportation equipment of all kinds and instruments.

Iron Age expects a strong upturn in new orders to start by September. From an estimated June total of about $59.5 billion, orders should reach about $62.5 billion in September, and hit about $67 billion in the closing month of the year.

Capital spending, an important gage of metalworking industry health, is also currently caught in the doldrums.

QUARTERLY FORECAST

There is little mystery to the slack investment situation. Note in the charts here that two key determinants of plant spending, corporate cash flow and plant operating rates, are both down compared to recent-like periods of time. Neither are down dangerously, but are not at levels that would now spur capital investment.

The current slow pace of plant spending was expected by business executives. They told the Commerce Dept. in its latest survey, taken in April and May, that they would shell out $320.5 billion this year for new plant and equipment. That would put this spending up 8.4 pct from last year.

After allowing for expected inflation, that rise wrings down to a thin 1 pct gain in outlays in 1981 over a less-than-sparkling showing in 1980.

It is significant, in highlighting the recent slowing fortunes of business, that these executives sharply cut back their capital spending intentions between the survey taken in January-February and the one taken in April-May. In the earlier survey, executives said they would boost their outlays by 10.2 pct.

In sum, U.S. executives say they will increase their spending this year on new plant and equipment by 1 pct in real terms. The record shows this spending last year rose by .2 pct.

The Commerce Dept., survey shows a steady increase in plant spending as the year progresses. From outlays of $312 billion in the second quarter, executives plan to spend $323 billion in the third period and $333 billion in the December quarter.

The *Iron Age* table here shows plant spending moving up at a faster clip and culminating in a very strong closing quarter. This spending is based on business fixed investment as a GNP component and differs slightly in makeup from the Commerce Dept. survey definition of plant spending.

The *Iron Age* forecast is probably more optimistic than the survey findings as to year-end capital spending strength because it was made at a later date than the survey. If the same executives were asked today about their intentions, it is quite possible they would raise their spending sights a bit for at least the last quarter.

The reason to expect more upbeat attitudes lies chiefly in the cooling off of inflation. Easing prices signal future rising market demand—and this is something that leads to stepped-up capital spending plans. The hard numbers on the cracking on the price front has become known only very recently. Some of the executives surveyed did not have those numbers when they set their spending plans for the last quarter of the year.

In the first quarter, the price deflator for GNP fell to 10 pct, down from 10.7 pct in the previous period. That was good news from the economy's most comprehensive measure of inflation.

Then later, came reinforcement of this good news on prices. The consumer price index in April ran at an annual rise rate of 4.8 pct. This was down from a 6.8 pct average rate for the previous 3 months. And it was down from 10 pct for the previous 12-month average rate. That's a strong trend line, no matter how it's viewed.

And, notably, producer prices in May rose by only .4 pct from April. That was one-half of the April rise and was the smallest increase so far this year.

The question comes up at this point on the continuing high price of money itself. This is an element of inflation, of course, but it now appears that inflated money costs don't hurt the economy as much as once thought—and feared.

Note in the charts here how the economy grew over a three quarters span at the same time the price of money—depicted in the prime interest rate—was bounding upward in good-size jumps.

Charles Schultze, President Carter's chief economic adviser, has noted, "This economy is a lot more resilient in the face of higher interest rates than we ever thought."

Another top economist has said, "The economy is doing an excellent job of acting as though high rates don't exist."

The key question in the economy right now centers on whether or not inflation will continue to cool. Just about all the forecasts of a quickened pace of business recovery by year-end are based on the belief that it will. And, that long-awaited happening does seem almost certain, at least through the end of this year.

The stepped-up pace of business recovery near year-end resulting from retreating inflation, would carry metalworking new orders and capital spending along with it.

Normally, plant spending would lag in such a recovery. That means, if tradition prevails, that plant outlays would

Plant Spending: The Pace Will Soon Quicken

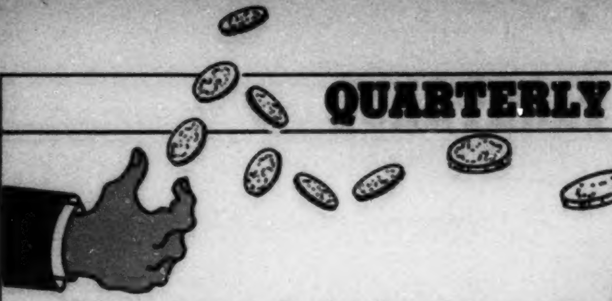
Billions of Dollars, Seas. Adj. Annual Rates

Quarters	Total Spending	Equipment Only	Percent Changes Equipment	Structures
1980				
4th Qtr.	$302.1	$190.7	+2.1%	+3.9%
1981				
1st Qtr.	316.1	199.4	+4.6	+4.7
2nd Qtr.*	323.7	204.6	+2.6	+2.0
3rd Qtr.*	332.0	210.3	+2.8	+2.3
4th Qtr.*	347.0	220.0	+4.6	+4.4

*IA Forecasts

Source: U.S. Dept. of Commerce

QUARTERLY FORECAST



not likely move up strongly when the recovery pace hits the forecast new tempo near the end of the year. But this spending has already lagged the business recovery that has taken place since the second quarter of last year. "The traditional lag has been used up," notes one economist. He, and others, note that plant spending will likely join the rest of the economy in a 'go' situation at year-end.

So, inflation cooling is the key to a forecast year-end surge in the economy. But is it so certain that inflation will continue to run down through the rest of the year?

There are good reasons to believe that it will.

First off, of course, is the continuing sluggish pace of business. The current business cycle is not building up demand-pull price pressures.

It will probably be near the end of the year before cycle-deferred demands and the bright promise of the Reagan economic program leads to a step-up in business recovery strength. By then, inflation should be tempered somewhat, if not subdued.

Economists at the Morgan Guaranty Trust Co. look for a slowing of inflation to 7.5 pct over the last half of this year and the first half of next year. This is in prices as measured by either the GNP deflator or the Consumer Price Index. And the 7.5 pct rise would compare to a 12.4 pct inflation rate in 1980.

There are other reasons to believe that inflation will continue to cool—reasons that go beyond price restraints due to sluggish business activity.

Take the unemployment rate. It went up in May, and is expected to go up more until near the end of the year. This trend will tend to temper wage demands by labor unions. Already, a slowing, or at least cresting, of the wage climb is apparent. The 12-month increase in the Employment Cost Index reached 9.3 pct in June of 1980—and has remained near that level since then. This index measures hourly wage rates, excluding overtime.

And it follows, that because inflation is lessening, so will payments on all those cost-of-living escalators in wage contracts. That can certainly help slow the inflation spiral. After all, more than 60 pct of major union contracts include cost-of-living escalator provisions.

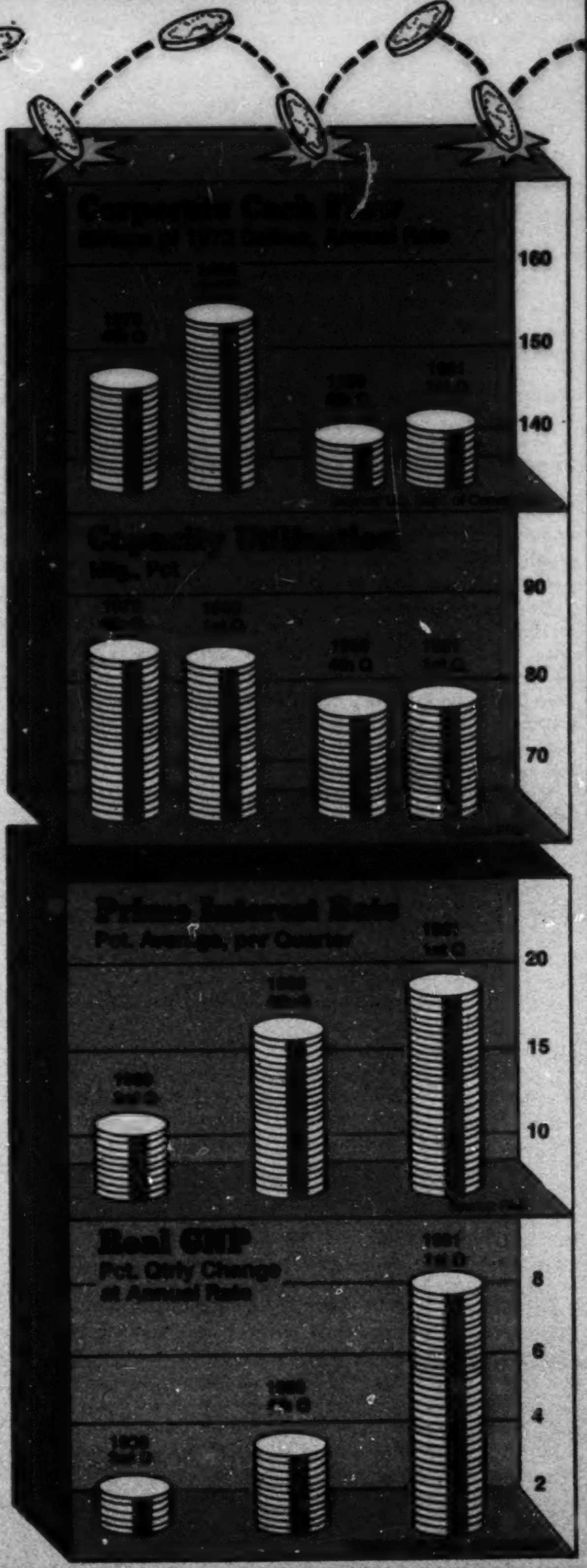
Another factor at work that tends to hold inflation in check is the strengthening dollar in foreign exchange markets.

The bank analysts note that the increase in the value of the dollar during the past year came to about 10 pct on a trade-weighted basis. That is a hefty adjustment.

Still another force now in motion that carries good tidings of further price cooling is the recent rise in labor productivity in the U.S. private business sector. Nothing absorbs price pressures more effectively than increased productivity, as many economists have noted.

Of course, to any degree that inflation does ease, the Federal Reserve Board can be expected to let up on its money supply restraints. Then, even the price of money—measured by interest rates—should in turn ease off. This particular step in winding down inflation, says one banker, is "something like a self-fulfilling prophecy." He considers it a final step on the way to a "tolerable" rate of inflation. □

John D. Baxter



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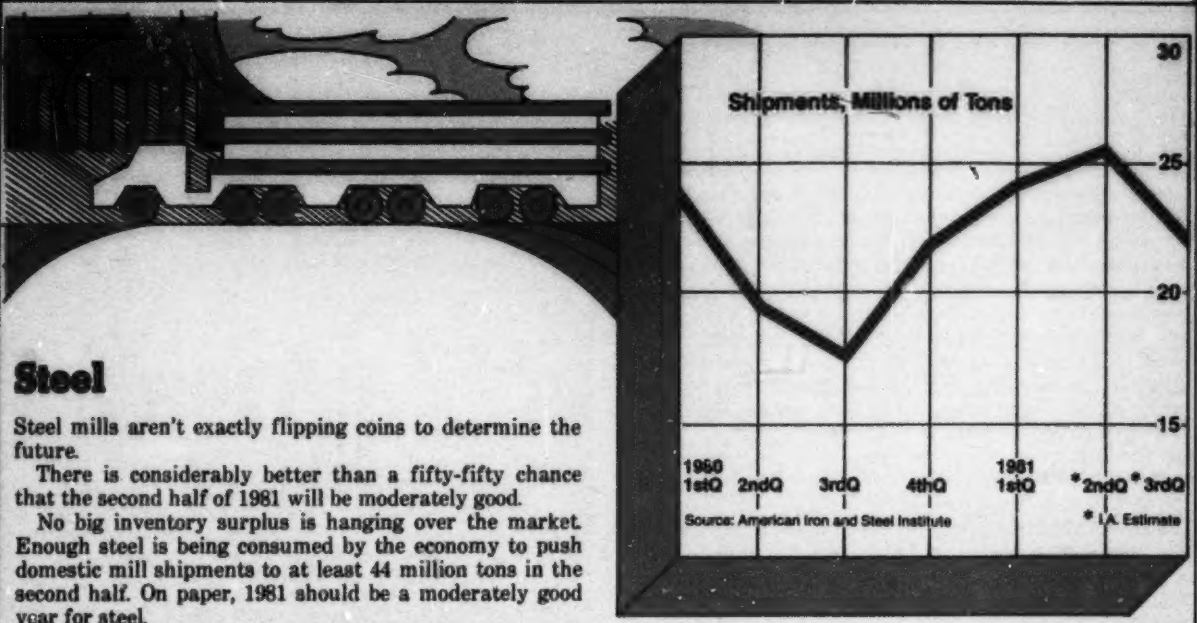


Source: American Iron and Steel Institute

Steel

Steel mills aren't exactly flipping coins to determine the future.

There is considerably better than a fifty-fifty chance that the second half of 1981 will be moderately good.

No big inventory surplus is hanging over the market. Enough steel is being consumed by the economy to push domestic mill shipments to at least 44 million tons in the second half. On paper, 1981 should be a moderately good year for steel.

However, the outlook is considerably less certain than it was a month or two ago. Until about May, it appeared that 1981 would be one of those rare years when steel companies sailed through a full 12 months without bumps.

A surprisingly strong first quarter was followed by an even stronger second quarter. Steel shipments of more than 48 million tons in the first half were up about 4 million tons from the first half of 1980.

This showing brought a general upward revision of forecasts. People who had been predicting shipments of 88 million or 89 million tons began saying 92 million or 94 million tons.

Then in late April and May, new orders for steel faltered. This was not unexpected. There is almost always an order lag when people begin booking tonnage for the summer months. Nothing more serious than a seasonal dip has yet been indicated. But after last year's market collapse, steel men are nervous. New cars aren't selling. Interest rates are high. Proposed tax cuts are still being kicked around in Washington.

Adding to the worries of domestic producers is the import situation. The 1.76 million tons of steel imported in April was up more than 600,000 tons from March. It was the biggest import total in 20 months.

The import spurt came just as everyone was convinced the Trigger Price Mechanism (TPM) had put a lid on foreign shipments. European producers were saying the trigger system amounted to an embargo. Domestic producers were commending the Federal government for its administration of the system.

If the April import tonnage was not a one-shot fluke, there are grounds for domestic mills to worry. The U.S. Commerce Department did not increase trigger prices in the third quarter. If April was representative, there is nothing to prevent a flood of imports over the next three months.

In 1977, imports surged in the slack second half of the year. The result was a collapse of steel prices and the elimination of steel profits.

The steel price structure is now in a fragile state. Informal concessions continued in the first half despite good demand. The June round of official price increases was unusually messy.

U. S. Steel led off with a general increase on June 1 and selective increases for June 21. Bethlehem Steel Corp. deleted the June 1 increase and put through smaller increases for bars and sheets. Armco, Inc., then came out with still smaller hikes for coated sheet products.

There seems little doubt the domestic price pattern was influenced by imports and trigger prices. Bethlehem's price announcement came right after the Commerce Department said there would be no boost in third quarter trigger prices.

The outlook is uncertain, but one nagging headache is out of the way. The 72-day coal strike ended when a new contract was ratified June 6. The strike was a financial drain; U. S. Steel estimated a cost of $1 million a day. However, there was no effect on steelmaking operations.

By mid-June, picketing by construction workers was still keeping some 95,000 miners off the job.

The next few months could be crucial in terms of steel capital spending. A modest spending boom has started. Projects worth more than $3 billion have been announced since last November. U. S. Steel by itself, has authorized projects that will cost nearly $2 billion.

The coming of the Reagan Administration and the good first half market have clearly boosted the morale of steel people.

However, it wouldn't take too many bad months for capital programs to be delayed or cancelled. During the 1974 boom, the steel industry made plans for a 20-million-ton expansion. When the bottom fell out in 1975, most of the planned capacity was scratched.

Imports could be a factor in the capital picture. The biggest steel programs involve seamless pipe mills for the oil field market. More than 800,000 tons of foreign pipe and tubing came into the country in April. Demand for oil country products seems endless, but there have been gluts in the past. With domestic mills making arrangements to do some importing of seamless, the threat of a glut is remote.

QUARTERLY FORECAST

Nonferrous Metals

Leading nonferrous metals producers have their fingers crossed for the second half of 1981.

This year was to be the mirror image of a rough 1980—busier in the latter half after a slow start—but it's starting to look like the calendar will get to July 1 before the economic recovery.

Key metal-using industries like automotive and construction remain far from robust and the early June upturn in interest rates didn't help matters. Metal users, while not exactly over-burdened with inventory, aren't likely to build stocks while money rates are high. Producers aren't carrying much inventory either, but the users don't seem to be worrying yet.

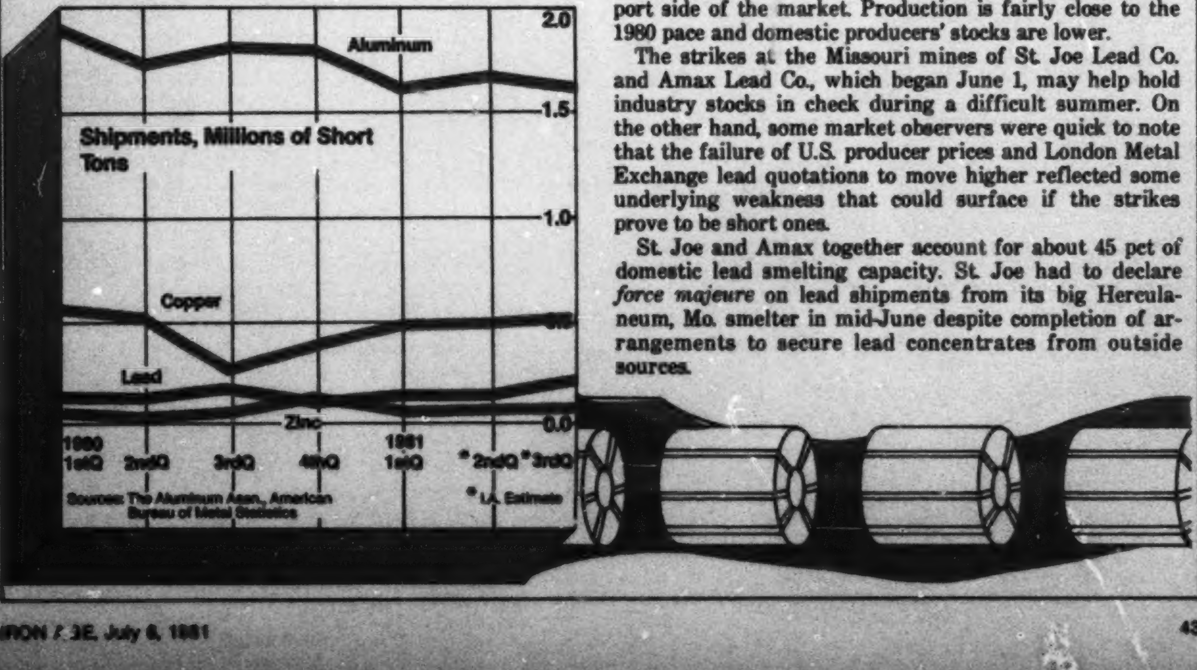
Copper prices slipped a few notches since the start of the second quarter to levels a few cents under mid-1980 levels. U.S. producers are operating with bare-bones stocks while their overseas competitors have managed to whittle their own inventories down as well. Hedge market stocks are somewhat higher than they were on the eve of last year's lengthy U.S. mine and smelter strikes, but do not appear to be getting out of hand.

Copper industry sources expect price recovery will be fairly rapid once the economy starts moving again, but remain uncertain as to the kickoff date. Meanwhile, there is the summer slowdown to struggle through, interest rates to worry about and Washington's decision on tax policy to wait for.

Cathode copper imports are down about 30 pct from the record 1980 pace, mainly because of the absence of Japanese shipments this year.

Crude aluminum imports, meanwhile, have started to creep up now that the once-boiling overseas market has cooled down. Ingot imports are up roughly 25 pct from the 1980 pace. Ingot exports, which were up more than 250 pct in 1980, this year are only about 10 pct lower.

New business booked for domestic delivery by the U.S. producers during the first third of this year was down nearly 14 pct, or 324,000 tons, according to the Aluminum Association's calculations.



Sources: The Aluminum Assn., American Bureau of Metal Statistics

*I.A. Estimate

Aluminum production in the U.S. and worldwide continues close to last year's record-breaking pace despite a sizable increase in producers' stocks. Production is down in Japan, which took in a lot of imported ingot and scrap during 1980, and slightly lower in Europe.

Free market prices eroded during the early months of 1981. An effort by one U.S. producer to move the domestic ingot price higher failed to draw support from competitors. U.S. producers' inventories of ingot, mill products and scrap rose by about 6 pct in the first quarter and the trend was upward.

Foreign zinc producers apparently have zeroed in on the U.S. market again. It's no secret that U.S. producers hold only about 40 pct of the domestic market, but with European consumption down, quite a few overseas producers seem to be crowding the Canadians for a larger share of U.S. business. Spain, Belgium, the United Kingdom, Holland, Norway and Italy were among the countries shipping more zinc here in the first third of 1981.

Domestic zinc prices are slightly higher than they were a year ago. The trend for the second half depends on whether automotive industry demand starts to pick up fast enough to absorb all that extra metal.

U.S. zinc producers' shipments in the first half were about on par with the same 1980 period—and about on par with domestic production. What is helping is the fact that domestic producers' stocks are only about a third of what they were a year ago, thanks to the big drawdown during most of 1980.

What the lead producers need is another hot summer like the one that took a toll of automobile batteries last year—and a winter unlike the mild ones that let many a car owner stretch another year or so out of the battery already in place.

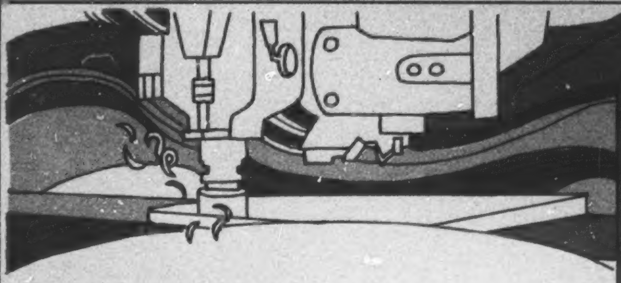
An improvement in sales of U.S.-produced cars, which carry U.S.-built batteries, wouldn't hurt either. Original equipment batteries form a small part of the total storage battery market, but when domestic car sales are down as much as they have been, the loss can't be shrugged off easily.

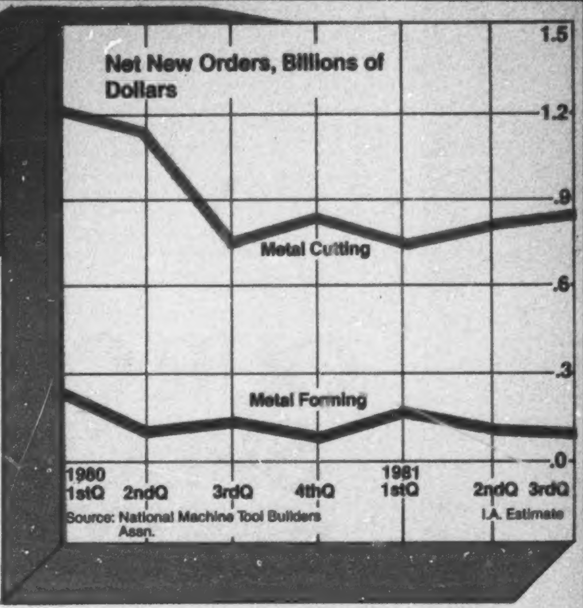
Lead shipments by domestic refiners were up about 13 pct in the first half of 1981 despite a sharp drop in the export side of the market. Production is fairly close to the 1980 pace and domestic producers' stocks are lower.

The strikes at the Missouri mines of St. Joe Lead Co. and Amax Lead Co., which began June 1, may help hold industry stocks in check during a difficult summer. On the other hand, some market observers were quick to note that the failure of U.S. producer prices and London Metal Exchange lead quotations to move higher reflected some underlying weakness that could surface if the strikes prove to be short ones.

St. Joe and Amax together account for about 45 pct of domestic lead smelting capacity. St. Joe had to declare *force majeure* on lead shipments from its big Herculaneum, Mo. smelter in mid-June despite completion of arrangements to secure lead concentrates from outside sources.

QUARTERLY FORECAST





Source: National Machine Tool Builders Assn.

I.A. Estimate

Machine Tools

United States builders of machine tools and manufacturing systems entered the third quarter on a note of optimism.

There are definite signs of strengthening in incoming order rates, many believe, and this renewed interest may well signal the end of the downturn in machine tool buying that U.S. builders have battled since last summer.

Furthermore, a third-quarter upturn is precisely the scenario many executives wrote for the industry at the beginning of the year. Net orders would limp along at less than breakneck speed for the first two quarters, key officials said at the time, then turn upwards again in the second half as the nation's manufacturers renewed their efforts to reindustrialize.

The recent comments of one of the nation's largest machine tool builders headquartered in the Midwest summed up the situation nicely.

"Orders are below peak levels of the first half of 1980," a company official said recently, "but new business is being booked at favorable rates.

"With interest rates shooting up again, it's difficult to pinpoint demand in the short term. Smaller customers in particular are having cash flow problems—and we have seen some cancellations and a few requests to postpone shipment.

"But in the first two months of the second quarter, orders were at even better levels than in the first quarter, and we are continuing to increase our shipping rates. So, the short-term outlook for our machine tool business is favorable in the U.S."

Still, the industry is not without its problems, and there are indications now that the second-half recovery builders have been waiting for will be far less dramatic than officials once hoped for.

The most important problem centers on the Reagan Administration's efforts to sell an ambitious tax reform package to Congress. That package, generally hailed by capital equipment builders when it was introduced four months ago, called, among other things, for an acceleration in depreciation allowances to permit manufacturers to write off buildings in 10 years, machinery and equipment in 5 years, and cars, light trucks, and research and development machinery and equipment in 3 years.

But the package has run into problems, and President Reagan's decision last month to water down the 10-5-3 plan in an effort to sell it to diffident Democrats cast something of a pall over industry optimism that the plan would stimulate a timely new round of investment in capital equipment, especially in light of the fact that Congress remains truculent.

James A. Gray, president of the National Machine Tool Builders' Association (NMBTA), summed up industry's feelings about the impasse recently. Sagging sales, Mr. Gray said, "should be read as a message to Congress that we need action now, not just promises. More than ever, the need for 10-5-3 depreciation reform is felt.

"While we applaud the businesses that have already demonstrated their faith in the economy's future by placing orders," he added, "many more are taking a wait-and-see attitude. Debate on tax reforms continues in Congress, but so does a national feeling of uncertainty. That gnawing uncertainty would be alleviated by swift passage of the President's tax reform legislation."

Another major problem is the growing penetration of overseas machine tool builders in the domestic market.

Japanese builders pose the biggest threat. Despite the 12-month slowdown in bookings generally, Japanese shipments to the U.S. continue to climb. Some experts feel that Japanese sales in the U.S. will hit the $550 million level by the end of the year, some 20 pct higher than the record $472 million seen in 1980.

In addition, increased penetration of European markets by the Japanese is resulting in stepped up exporting efforts by many European builders. Some are now establishing or beefing up U.S. subsidiaries to offset losses of market share at home.

The recent opening by the Italian Machine Tool Builders Association of a U.S. office—just down the road from the NMTBA—is typical of what's happening and a clear indication that Italian builders are dead serious about increasing their share of U.S. sales. Similar conclusions can be drawn from the current U.S. marketing effort by the Committee for Cooperation of the Machine Tool Industries in Europe (CECIMO), an organization representing machine tool builders from 13 European countries. The group is currently staging a major advertising blitz urging U.S. buyers to consider machine tools built abroad.

One development that bodes well for U.S. machine tool builders is the steady increase in shipments that the industry has achieved in the past two years. This increase, the result of investments of more than $1 billion in new plants and equipment by U.S. builders, is helping to reduce extremely long lead times which have been running two years out and longer in many instances.

QUARTERLY FORECAST

Automotive

"It's hard to forecast a turning point," said one auto official, but the industry is hoping October will be it.

Automakers are hoping that the unusually high number of new models introduced then, plus the midyear models already debuted but still not widely available, plus lowered interest rates, will mean a big recovery. "When interest rates get below 18 pct, customers will start coming back," said one analyst. "If they get below 15 pct, there will be mob scenes."

The lower interest rates of September and October 1980 did lead to more buying, as did the rebates of February and March 1981. Good sales then convinced the automakers that consumers are ready to buy, but are waiting for economic good weather. Since April 1979 Americans have junked more cars than they've bought and that too should mean pent-up demand.

Sales in the second quarter plunged from the rebate-inflated highs of March, when 719,000 domestically produced cars were sold. April saw 534,000 such sales, May 524,000, and June won't be much, if any, better.

General expectation throughout the industry is that the third quarter will be much like the second, though the vice-president in charge of sales and marketing at the leading automaker thinks: "Sometime after midsummer, we'll start seeing a noticeable increase in sales. From this point on, every ten days we're going to see an improvement, on a gradual basis, against business from a year ago. By the end of the third quarter, it will be going very good and by the last quarter, it will be very strong."

The forecast of another sales vice-president was more typical of the industry. "We don't expect a sudden sales surge in the second half of 1981," he said. "But the industry should be selling a 10 million annual rate after the 1982 new model introduction."

Cars sold at an annual rate of 8.2 million in April and 8.1 million in May; imports accounted for 28 pct of that. American automakers expect the 7.7 pct cut in Japanese imports to have little or no effect on sales of U.S. cars.

"Our forecasts have been running high," confessed one auto analyst. "The recovery cycle is not as strong as it has been in past years."

"I refuse to be a forecaster any more," said the optimistic sales and marketing vice president quoted earlier.

Falling sales have raised the total domestic industry's current inventory of assembled cars to 1.45 million, a 71-day supply. A 60- to 65-day supply is normal. "The car companies thought interest rates would come down by now, so they produced more cars than they need," said one analyst. The industry will build fewer cars in June and July as it prepares to produce the 1982 models.

Besides driving away customers, the high interest rates have cut automotive orders of parts from suppliers. "We are trying to keep our working inventories of parts as low as possible," said one official.

"The interest rates are affecting us a great deal," said one buyer. "We need to improve the cash-flow situation in our company, and we're taking a narrower, shorter-term view of our options than we used to. Where we might have looked at a three-year increment before, we're looking at a one-year increment now. We do have three options: pay the supplier for the tooling up front; amortize at the piece/part price; or tell the supplier to eat the tooling. Our decisions are tending toward that third option. It's not a good situation."

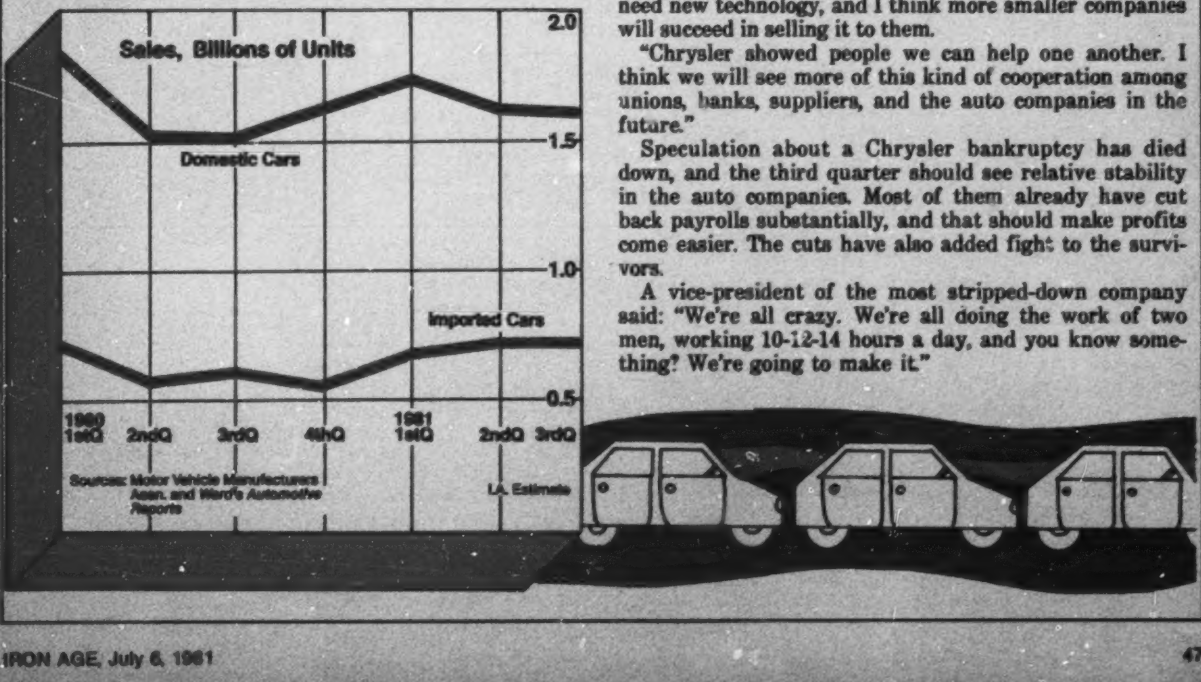
The automakers' current cash problems are causing delays and cancellations of retooling programs, but their need for technical input from suppliers has become acute. "The supplier has become the man of the hour," said one analyst. "The auto companies used to be high-handed toward the suppliers: They'd just as soon chuck them as say hello. Some big suppliers were badly burned. The cynical view of auto people used to be: When volume is low and you don't want to commit your resources, use a supplier. When volume gets up, drop him. That kind of thing has caused some large, high-technology metalworking companies to move away from automotive. Tactically that may be wise, but strategically it's a mistake.

"The auto companies are now much more willing to work with suppliers: I think the '80s will see much more cooperation between them. The automakers desperately need new technology, and I think more smaller companies will succeed in selling it to them.

"Chrysler showed people we can help one another. I think we will see more of this kind of cooperation among unions, banks, suppliers, and the auto companies in the future."

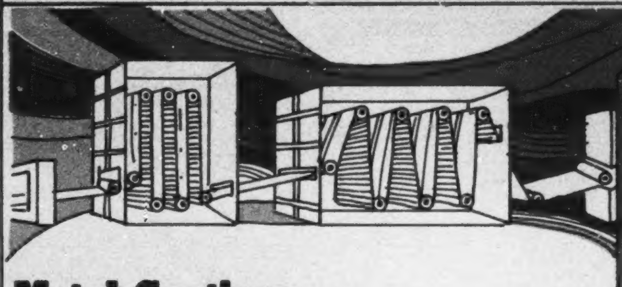
Speculation about a Chrysler bankruptcy has died down, and the third quarter should see relative stability in the auto companies. Most of them already have cut back payrolls substantially, and that should make profits come easier. The cuts have also added fight to the survivors.

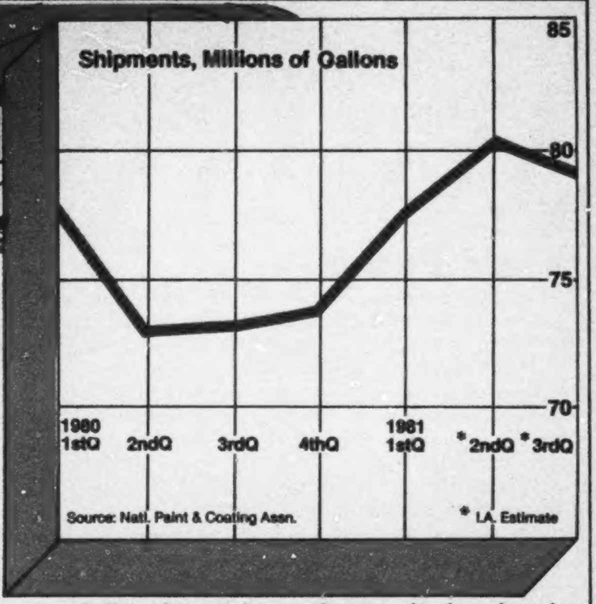
A vice-president of the most stripped-down company said: "We're all crazy. We're all doing the work of two men, working 10-12-14 hours a day, and you know something? We're going to make it."



Sources: Motor Vehicle Manufacturers Assn. and Ward's Automotive Reports

QUARTERLY FORECAST




Shipments, Millions of Gallons
85
80
75
70
1980 1stQ
2ndQ
3rdQ
4thQ
1981 1stQ
*2ndQ
*3rdQ
Source: Natl. Paint & Coating Assn.
* I.A. Estimate

Metal Coatings

Producers of industrial coating materials have seen little change in recent months in their shipments. And any change that's forecast for the remaining months of this year could only be described as slight.

Coatings producers are still feeling the impact of the slowdown in the heavy paint consuming industries, such as automotive and home construction. Moreover, other industries have been unable to pick up any of the slack.

The final first quarter shipment figures for 1981 showed that they were ahead of last year's first quarter figures by only 100,000 gallons. The second quarter figures of shipments are expected to fare better than the 1980 figures by about 9 pct. However, the comparisons in both the first and second quarters of 1981 are made against those of 1980, which rated as one of the worst years in shipments in recent history of the paint industry.

Because the producers of industrial coatings depend so heavily on the good health of so many other industries, their hope is that their major consumers—automotive and home building—will bounce back strongly before too long.

The forecast for the third quarter of 1981 is shipments of a little under 80 million gallons. Moreover, the producers do not foresee any political or financial decisions being made that would bring about a major change in direction.

The producers of industrial coating materials do not look for any major upturn in shipments before the end of the year. Some believe that no upturn is in sight at least until mid-1982.

In addition to the automotive and home building industries being down, other heavy users of industrial coatings—the coil coaters—are still licking their wounds from the dramatic slowdown they suffered in 1980. Furthermore, no major upturn is expected throughout 1981.

Here again, the high interest rates and the general uncertainty of the economy hurt residential, commercial and industrial construction—major markets for pre-painted or coil-coated steel and aluminum.

The latest figures for North American shipments of coil-coated steel and aluminum amounted to 3.2 tons annually. However, steel was off by almost 20 pct from the previous year, and aluminum was down by a little more than 12 pct.

The shipments of pre-coated stock to the automotive industry also showed a sharp decline due to the slowdown in car sales. Affected most were the pre-coated weldable zinc-rich primers on steel which are used extensively in passenger cars for added corrosion resistance. In 1980, more than 780,000 tons of this product were shipped to the automakers.

Shipments of coil-coated aluminum to the container and packaging industries slipped a little—in fact, very little. A decline in shipments of pre-coated steel to the appliance, furniture and fixture manufacturers was also posted, but the slippage here was less than expected. This, some coil coaters believe, is a good omen for growth when these industries bounce back.

However, the coil coaters are not sitting back waiting for the economy to favor them with new orders. Many are using this period of slow activity to spruce up their lines, to make their equipment more energy efficient and to add new controls that will upgrade their overall efficiency. Some are testing new coating materials or working with altered formulations for new applications.

Still others are working to boost their line speeds. Line speeds that not too many years ago were as high as 300 fpm have been increased to 600 fpm and higher. Some of the newer high-speed lines can apply an organic finish to a coil of steel or aluminum at rates as high as 900 fpm.

Despite the declined shipments, the coil coaters are optimistic about the longer-range outlook. To them, the present decline in shipments is a disruption in their overall track record which has shown an average annual increase of more than 15 pct since the early 1960s.

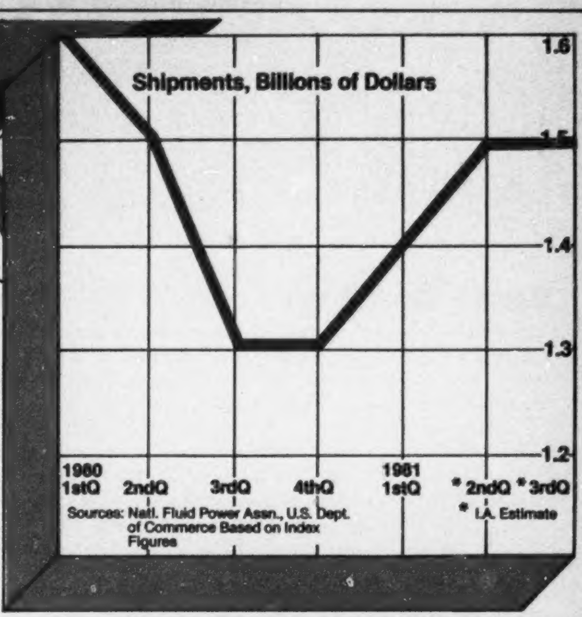
What's in store for the coil coaters in the near-term future? There's all kind of speculation, all of it conservative. But, generally, the coil coaters believe that a lowering of interest rates will do more to bring back the industry to good health than any other single factor. Once this occurs, it will give a big boost to the entire industrial coatings field.

The Department of Commerce notes that although the production of paints has slipped, the total value of all paints has increased by about 9 pct over the previous year. Commerce officials estimate that industrial coatings account for about 30 pct of the paint industry's shipments of paints, varnishes and lacquers.

Some spokesmen in the paint industry point out that the decline in the number of gallons produced annually is due in part to the more efficient methods of application. Some plants in which paint lines created excessive overspray have converted to electrostatic or electrophoretic methods of application. A few plants are redesigning products and processes to allow them to work with pre-coated sheet.

Increased efficiency is also being achieved in certain plants by the use of robots and computers, thus giving such plants the ultimate in paint application efficiency.

QUARTERLY FORECAST



Sources: Natl. Fluid Power Assn., U.S. Dept. of Commerce Based on Index Figures

Fluid Power

Fluid power shipments ran slightly above the year ago figure during the second quarter. The industry probably will hold at that level, a little over $1.5 billion shipments, in the third quarter of this year.

Even with some plant shutdowns during July, fluid power system builders feel they can ship enough after the vacation period to bring their activity up to the strong second quarter level.

Part of the difficulty in predicting the course of the fluid power market is that these systems have such a range of uses. Any one equipment producer may be serving only a portion of the total market spectrum.

If a company is heavily into "mobile" fluid power, the kind used on construction machinery, farm machines and light industrial equipment, it is probably having another slow year after a poor 1980.

Others, serving segments of the capital goods industry, are running well ahead of the industry trend. Some report running as much as 25 pct ahead of the year ago period in both the first and second quarters.

Nonetheless, there appears to have been a downturn in the new order rate in the April-May period. Marketers say that, as a general rule, this won't appear as a decline in shipments for another six months, so fluid power builders could scoot through to the end of the year without much change in shipment levels.

There's also one bright note in the lagging mobile equipment market. As one marketer put it, "They're down so far now, about the only place they can go is up."

These mobile markets aren't expected to show much recovery till late in the fourth quarter. Even then the plants that produce trucks, farm machines and construction machinery will be building against the 1982 market and will increase their output at a very cautious rate.

In some of the weaker markets, buyers of fluid power systems and components are looking at the pickup they expect some time in 1982 and wondering if there will be enough production capacity to handle their needs. The industry has been expanding, but there still seems a lot of concern that, if 1983 turned out to be one of those strong years like 1973 or 1978, deliveries of fluid power components could again get tight.

If fluid power can hold at the $1.5 billion shipment figure in the second quarter, then it will have enjoyed the strongest second quarter shipping period in its history.

Fluid power held at $5.8 billion in annual shipments in 1978 and again in 1979. In 1980, it did a bit better in the first quarter than it has in the 1981 period—$1.6 billion compared with $1.4 billion in 1981.

But it is the second quarter that has some forecasters in this industry convinced that they can move on to a new, all time dollar high in 1981 total shipments. The second quarter is running at $1.5 billion, or exactly the year ago level of shipments, and is now ahead of the first quarter total.

A cross section industry that covers almost any kind of market you can name, fluid power has been enjoying a lot of interest from the energy markets. But it's also held up surprisingly well in aerospace, where the market outlook had been regarded as a little shaky because of the problems of passenger airline companies.

This means that the 1980 pattern of a strong belt of demand running down the West Coast and across the Sun Belt states was still holding in the second quarter. Beyond that generalization, however, you get a pretty mixed bag. The big Midwestern heavy equipment market still hasn't picked up. On the other hand, even in bad times, farm and construction machinery tends to use a little more fluid power in its machines each year.

In a year not expected to generate a lot of new construction machinery business, Koehring Co., Milwaukee, has announced a new line of construction machines. A major selling point is that each machine uses a series of hydraulic systems, rather than a single central system, so that a failure in any one circuit would not affect the entire machine.

This is also happening in farm machines. As noted above, all of the heavy mobile industries are already operating at reduced levels and with low inventories of materials. They must begin at least some manufacturing increase in fourth quarter as they begin ordering parts for machines for the 1982 spring market, which is now expected to be a better year than 1981.

So if the new order rate has begun to wobble in the fluid power market, there is still a lot of strength left in the delivery levels for the second quarter and third quarter as well. The fourth quarter could show a mild uptick in delivery rates as it has for the past two out of three years.

With a strong base in its energy, machine tool and aerospace markets, fluid power is having a surprisingly good 1981 in terms of real shipments. It's also picked some gains in recent months in some consumer products areas where it certainly didn't look like there'd be much action during most of this year. What is worth watching are the stirrings of activity in markets that have been dead quiet.

QUARTERLY FORECAST

Construction Equipment

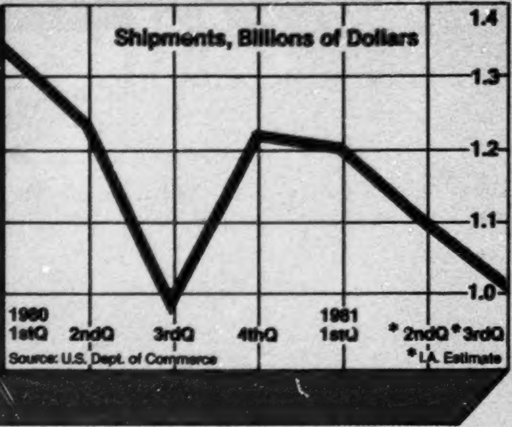
The construction equipment industry continued its swoon in the second quarter, turning in a sales performance that left many in the industry wondering when, if ever, the market will revive.

"Some of our guys are starting to wonder if we'll ever recover," said one industry member. "I can't remember when I've seen a slump that lasted this long."

The industry's less than thrilling pace stems largely from the slump in housing construction, which snailed along at a recession-level 1.3 million unit pace last year and dipped even further during the first half of this year.

When new home construction slips, it takes a healthy share of the road construction and commercial building along for the fall. For the equipment producers, that means little or no sales of the small and medium sized equipment like backhoes and bulldozers.

Many in the industry point to the ever-rising prime interest rate and note that most housing contractors must borrow at several points above that rate to finance their work. "That's an awfully big pill for them to swallow," quipped one industry executive.



Source: U.S. Dept. of Commerce

*I.A. Estimate

Other industry managers blame the high mortgage rates, reported to be at or near 17 pct in many areas of the country, and complain that it has locked many first time home buyers out of the market. The new money market funds are also working against the construction industry, draining away what money would be available from the thrift institutions, historically the home builders' main lender.

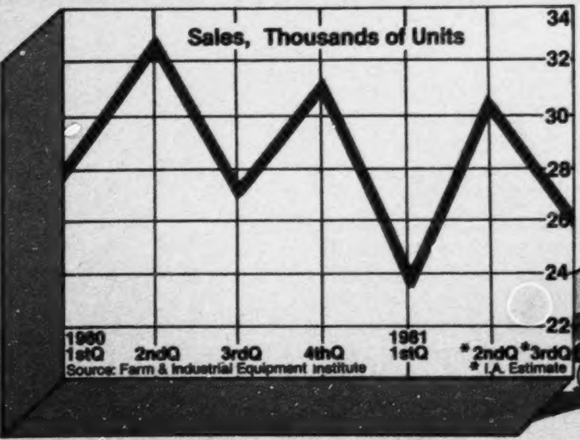
Road construction is another segment of the equipment market which is offering little comfort or hope. "There's virtually no Federal money," complained one marketing manager with one of the nation's largest equipment producers, "and the states are hard pressed because of the drop-off in gas tax revenues."

Farm Equipment

Another victim of high interest rates, the farm equipment industry in the U.S., has been shading its forecasts downward throughout second quarter.

The year didn't begin well for the industry. As *Iron Age* pointed out in late 1980, monthly sales were erratic even in the fourth quarter, usually one of the industry's strongest retail sales quarters of the year.

But in the fourth quarter of 1980, the later data suggests a slip in retail tractor sales to 31,000 units. That's an anemic seasonal gain of only a little over 14 pct from the preceding quarter. Even when the first quarter of 1981 showed a 23 pct retail sales drop from the fourth quarter of 1980, a few diehards hoped the recovery was still going to come.



Source: Farm & Industrial Equipment Institute

*I.A. Estimate

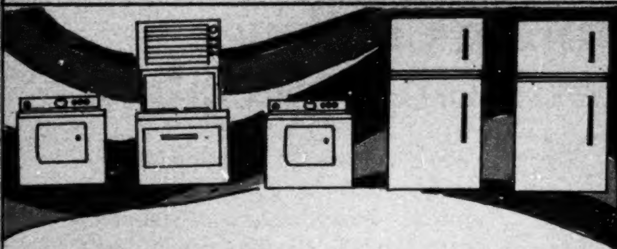
That hope died when interest rates began to climb in March and April. The resulting cutback hasn't been as bad as the impact a year ago. But it bombed hopes for a recovery that have been nursed by farm equipment builders since the fourth quarter of 1980.

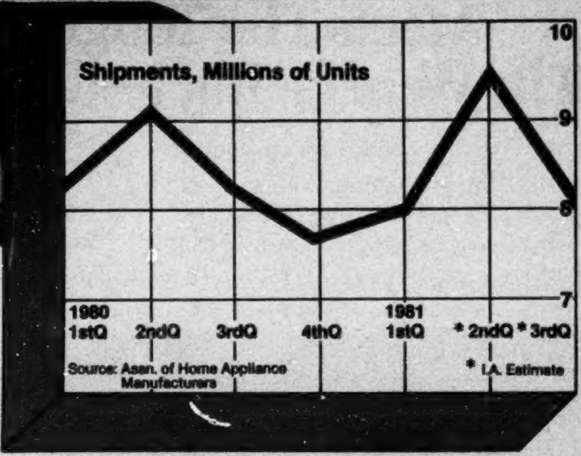
Farm equipment manufacturing schedules have been slipping. It now looks as if the final second quarter totals will be the lowest in the past four years. The third quarter usually falls seasonally, and this year it could slip to a little over 25,000 tractors at retail—the lowest figure in the four year period charted by *Iron Age*.

A fourth quarter resurgence is expected. But it will be from a low base. Farm equipment builders watch their finished goods inventories pretty closely, since they carry the cost of much of the equipment out in the field.

If retail sales should revive in the fourth quarter, it will at least clear the decks at the dealer level of any carryover inventory that might discourage year-end manufacturing schedules. The next manufacturing seasonal upswing is aimed at the 1982 spring market. That is expected to be a pretty good one. But it won't help production rates at the farm equipment plants till September and October and, even then, the real pickup won't get going till January.

QUARTERLY FORECAST




Shipments, Millions of Units
10
9
8
7
1980 1stQ
2ndQ
3rdQ
4thQ
1981 1stQ
* 2ndQ
* 3rdQ
Source: Assn. of Home Appliance Manufacturers
* I.A. Estimate

Appliances

Defying interest rate problems, appliances have shown some fairly strong months in 1981 to this point. If the industry can hit the 9.5 million units some analysts see for the second quarter total, it will be the strongest quarter since the second quarter of 1978.

Nonetheless, operations will cut back to a much lower level in the third quarter. Partly, this is a normal seasonal phenomenon. The second quarter is always the strongest quarter for appliance makers: they ship out a strong surge of big appliances aimed at both summer and fall markets.

This year, distributors reportedly are stocking up against a wave of price increases set for June and July. That's bound to rob some factory business from the third quarter.

Again this year, room air conditioners have been boosting the finished goods shipment totals. In the first four months of this year, appliance makers hiked their output of room air conditioners to distributor-dealers by a sharp 30 pct. Microwave ovens did even better, up 36 pct in the same period.

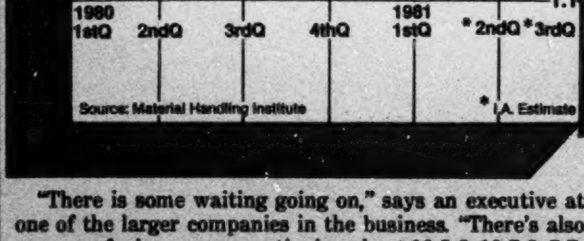
If appliance builders can meet their forecasts for the second half, they'll beat 1980; even though housing starts are under expectations. The third and fourth quarters usually decline below the second quarter peak. They're expected to do it this year. But the decline is going to be from a higher second quarter than a lot of analysts expected. Some even remarked that the *Iron Age* second quarter forecast of 9.5 million units might be understating the final second quarter shipment count by as much as a million units.

Nobody seems to expect housing starts to get back up again until 1982. But the appliance industry is weathering a poor housing market and high interest rates a lot better than it did in 1980. Seasonally, the big manufacturing season for this year is ending.

Material Handling Equipment

The outlook for material handling equipment is better than ever. Unfortunately, the business isn't.

Sales in some segments are not where the industry thought they would be a year ago, and there is some uncertainty among large system makers about interest rates.



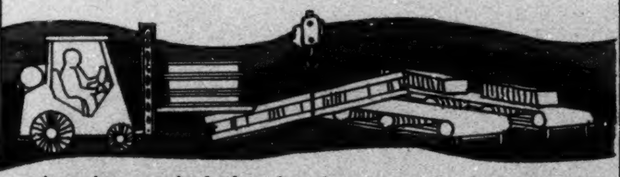
"There is some waiting going on," says an executive at one of the larger companies in the business. "There's also some confusion, some questioning about 10-5-3, 10-7-3, 7-7-7, or whatever.

"I think we're going to have to wait until the tax package, whatever it is, is passed before we can tell about any industry's intention," he adds. "We feel the market for the large warehousing system is poised for a real surge, but people are holding off until they know for sure about write offs."

Seemingly, this hesitation has spilled over into smaller ticket items as well. "Lift truck orders aren't up as much as we thought they'd be earlier in the year," says one manufacturer. "Looks like everybody is waiting on the Congress and the President," he adds.

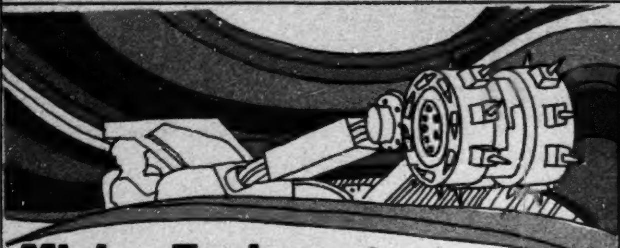
"The interest rate issue is also keeping people from moving on expensive purchases, but not in all cases," says one company executive. "Certain industries, automotive and farm equipment seem to be ignoring the prime rate debate. They're going right through with their capital plans in some plants. It's a mixed bag."

Other companies in the material handling industry expect to share significantly in the re-industrialization of America, particularly when interest rates drop to a less spectacular level. Larger systems can be priced in the millions of dollars. While some of the corporate giants can ignore, or at least accept, 19 or 20 pct, many smaller, more frugal customers clearly are not in the market now.



If and when these other potential customers enter the market for modern material handling, the few full service material handling systems companies will be hard pressed to deliver within reasonable time.

QUARTERLY FORECAST



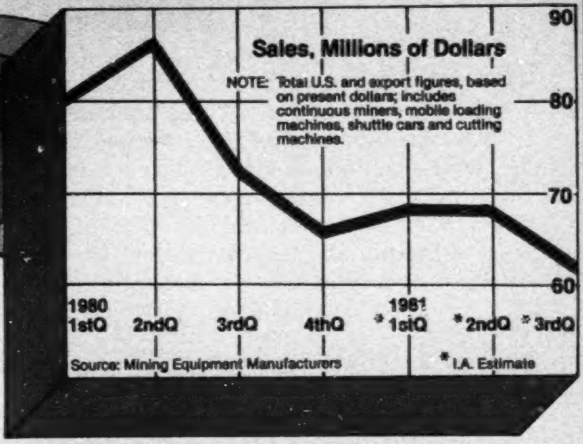
Mining Equipment

"We weren't hurt by the coal strike," says one mining equipment manufacturer. "But," he adds, "those folks in the parts end of the business were."

The rest of the year should produce steady growth in most kinds of mining, particularly coal, he says. "The market for coal mining equipment should continue up," he adds, "especially now that mining companies see the end of certain political hindrances in Washington. Those Federal lands opening up could mean a boom for some of us."

Other mining equipment companies agree. "Interest rates? Well, I'd say there's been some clearing at least in terms of one thing," says one Eastern U.S. manufacturer. "They're high and going to stay high for as long as the Fed says so. But even at 19 or 20 pct, if mining companies feel free to go for good returns, or sensible returns, so what?"

Equipment makers in the mining industry make some big ticket items and off-the-shelf products. "Interest rates have a major effect on dragline purchases, but very little effect on roof bolts and dynamite," explains one mining company executive. "In general, however, people still don't expect interest rates to stay near 20 pct, so in big ticket items, I think there has been some holding off, some waiting," he says.



NOTE: Total U.S. and export figures, based on present dollars; includes continuous miners, mobile loading machines, shuttle cars and cutting machines.

Source: Mining Equipment Manufacturers

* I.A. Estimate

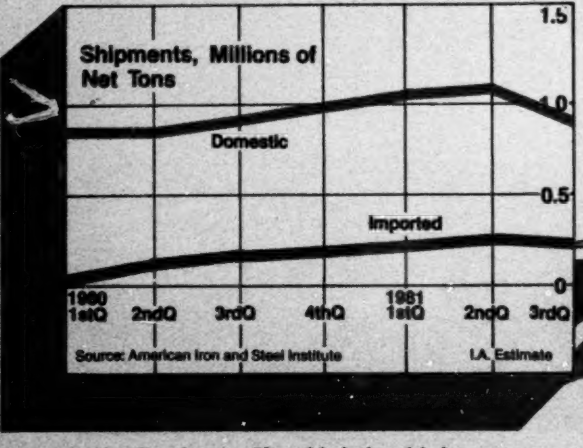
Inventory backlogs, except for replacement parts, have been very healthy for mining equipment manufacturers. Larger items, like draglines and stacker-reclaimers aren't warehoused anyhow.

All in all, the mining equipment business now sees itself as a growth industry largely due to the end of Washington's anti-mining era and the beginning of a more sensible time. "Coal mining is a booming business now, and that's about all that we need to know," says one large equipment maker. "The strike's over, so let's all go back to business."

Oil Country Tubular Goods

The third quarter is already history for the majority of producers and distributors of oil country tubular goods (OCTG). Most closed their books on the quarter in either April or May, and are now working on the fourth quarter.

"We're sold out into the fourth quarter," remarked an official for a major tubing and casing distributing company in the Southwest. He added the third quarter was the "strongest quarter" for OCTG bookings that he's seen in his 25 years in the business.



Source: American Iron and Steel Institute

I.A. Estimate

"It's a very bullish market," he said, adding "there's been no let up at this time." In fact, he noted that his company has been hardpressed to keep up with the demands.

The OCTG market still remains tight, he explained, primarily due to the inability of domestic steel firms to keep pace with demand and the lack of threading capacity. "Our threading backlog is six months," he said.

Demand has become particularly strong for high-strength, premium joint tubing and casing items, the official noted. Premium joint tubing, which industry observers predicted would glut the market by the third or fourth quarter, has increased greatly in demand, he said.

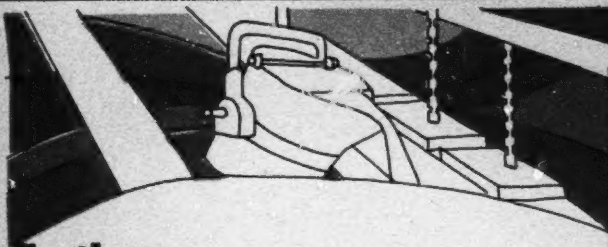
On the other hand, the demand for carbon tubing and casing is growing soft. It has not yet led to a glut in the market, but one observer noted, "we're very close to having too much carbon tubing."

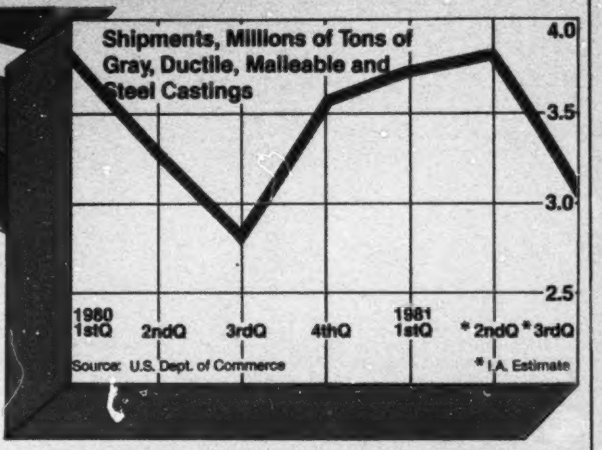
A major tubing producer also said there has been "inventory accumulation" in carbon casing and light wall items. "The likelihood of further accumulation in the fourth quarter could occur in small outside diameter casing items," he noted.

The slackened demand for carbon OCTG items has apparently been caused by the growing number of steel producers entering that market and rising imports. In the first quarter alone, the American Iron and Steel Institute reported that OCTG imports were 435,017 net tons, about a 62 pct hike over the year-earlier period.

Nevertheless, the tubing producer said he still remains optimistic about the third quarter, because of the high domestic rig count.

QUARTERLY FORECAST




Shipments, Millions of Tons of Gray, Ductile, Malleable and Steel Castings
4.0
3.5
3.0
2.5
1980 1stQ
2ndQ
3rdQ
4thQ
1981 1stQ
* 2ndQ
* 3rdQ

Source: U.S. Dept. of Commerce

* I.A. Estimate

Castings

The foundry industry showed some moderate gains in second quarter. In fact, it now appears that second quarter of 1981 may be the best quarter for total tons of castings shipped since the first quarter of 1980.

With a seasonal lull approaching, the industry is expected to slow down through June. There are some exceptions that could make foundry industry an indicator to watch.

While the forecast tracks ferrous castings (steel, gray iron, ductile and malleable), there are some surprising order rates in some copper, brass, and aluminum foundries. One of these, with a strong participation in energy markets, is caught with an advancing lead time and more new work than it can comfortably handle.

Another northern nonferrous foundry was hit with a sharp order upsurge in April that has given it a substantial backlog and one that is still growing. A third industry source says he noticed a pickup as early as January, but the real order surge hit in April. His firm will be running full through June.

So far, these breaks upward have come only in exotic, or fairly limited volume markets—other than energy and aerospace which can produce a lot of volume castings orders and have been doing just that. But a few ferrous foundries are also receiving some unexpected business.

Despite this, *Iron Age* sources still see a cutback in castings activity of as much as 20 pct below second quarter totals in the third quarter. But these sudden spurts of ordering suggest that the fourth quarter may see the first signs of recovery in heavy equipment markets.

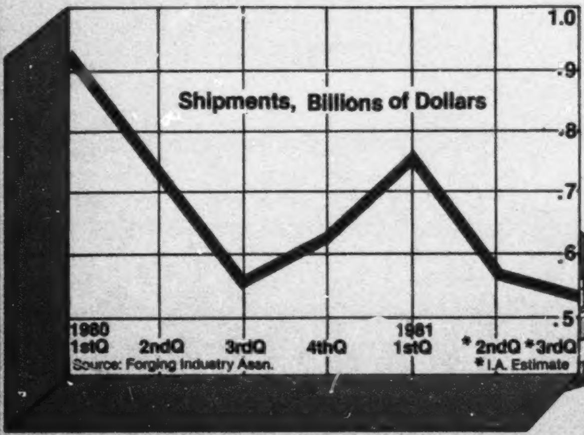
Some suppliers to the industry are already predicting the possibility of a strong September rebound after the summer lull. There is a seasonal fourth quarter in ferrous castings shipment, but some sources are betting that it will be a very moderate decline.

Forgings

Although forging orders at the beginning of the second quarter dropped sharply, industry officials believe their business is "firming up."

The strengthening, however, is mild and does not appear to presage any substantial industry growth.

"I've noticed automotive has picked up a little," said one industry spokesman. "That could be a reflection of increased production or a sign that inventories have dropped dangerously low."



Source: Forging Industry Assn.

* I.A. Estimate

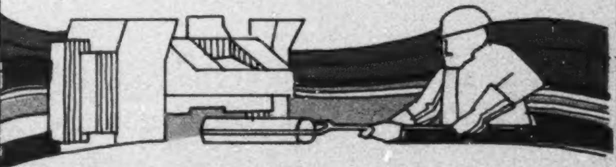
The oil field business continues to boom. Several forging companies are diversifying product lines and moving into this area.

Aerospace orders are still strong, although lead times for that industry have shortened in the past two years. Some forging companies tied to the aerospace industry are reported to be out looking for business.

Increased military spending not only in aerospace but for other types of ordnance, such as ships and tanks, means new orders for forgers this year and for the next several years.

A decision to begin production of the B-1 bomber would be a shot in the arm as would a proposed move to replace Jeeps.

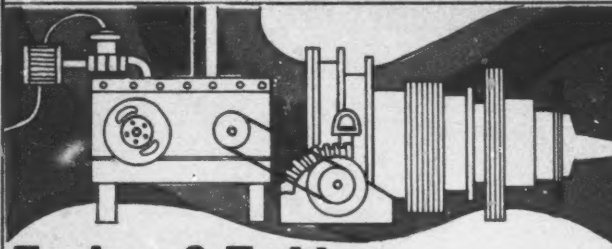
Orders from off-highway, farm machinery and automotive manufacturers remain depressed, however. High interest rates are also causing problems. Capital expansion programs are down and, with the high interest rates, customers are ordering in fits and starts. Industry officials see this as an attempt to use the forging manufacturer's facility as a warehouse for orders.

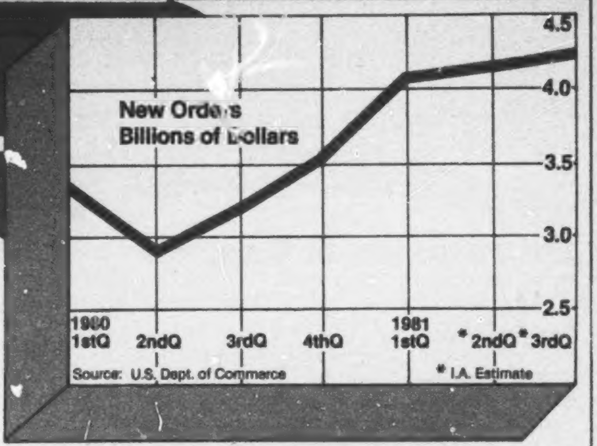


"Customers order erratically, want their parts immediately when they do order, and are not above trying to talk you into running a warehouse for them," explained one manufacturer.

Several manufacturers are optimistic that the prime rate will drop to more respectable levels in the coming months.

QUARTERLY FORECAST





Engines & Turbines

In the broad category of engines and turbines, ranging from small gas engines to huge turbine generator sets, things range from strange to worse.

At the larger end of the spectrum, the turbine generator sector still is depressed. Both the U.S. and Western Europe are struggling to work off excess generating capacity. That leaves manufacturers scrambling for business in developing countries, executives say, and there just isn't enough to go around.

"It's been strange," says one executive. "We've experienced a real double dip and now the industry is going through interest rate paranoia.

"Capacity utilization is very low," he adds, "and demand isn't expected to exceed replacement levels. It's slow."

In the diesel end of the industry, however, executives and economists hold to their prediction of the past quarter that any increase in demand will send order rates soaring. Inventory levels are so low, they say, that once demand picks up, even slightly, OEM order rates will shoot up.

"The third quarter is pretty well in now," says one diesel company economist. "Production will be slightly above last year and retail sales will be slightly below."

Things will begin to show some improvement in the fourth quarter, he believes, and a true recovery will be evident in the first quarter of 1982.

Says another engine maker, "I'm convinced inflation is finally, fundamentally, coming down. Who knows," he quips, "things look good enough—even Detroit might sell a few cars."

At the other end of the spectrum, manufacturers of small gas engines are finishing off a very tough year.

Makers of lawn and garden equipment, the engine makers say, are keeping minimal inventories and for the second half of the year, sales may be as low as half last year's levels.

Aircraft

Charles Dickens could have been describing the aircraft industry in 1981 when he wrote, "It was the best of times, it was the worst of times . . ."

U.S. Air Force spending will be up. But whatever turn the selection of a new bomber, and possibly a new military transport plane, may take eventually, the programs will have little or no impact immediately. Current talk revolves around $3 billion to $4 billion in fiscal 1982 and 1983 budgets. That amount does not go far in designing and building aircraft. Also, new appropriations may be expected to displace current programs in part.

Commercial Plane Orders

1980	Boeing	McDonnell-Douglas	Lockheed	Airbus
1st Q	108	10	4	4
2nd Q	119	16	1	10
3rd Q	26	4	8	10
4th Q	93	2	3	26
1981				
1st Q	91	14	1	21
April	14	4	1	4

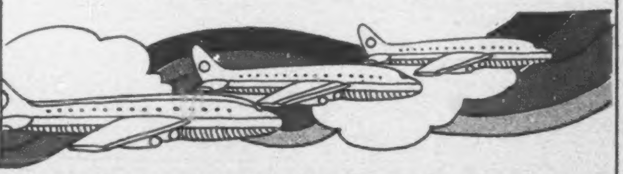
Escalating fuel prices, which have adversely affected airline traffic growth and profitability, appear to have paused, but have yet to be translated into plane orders. Financing remains a major problem. Proposed reduction in lending authority for the Export-Import Bank would directly affect $2.5 billion to $3.5 billion in orders during the remainder of 1981 and 1982.

Orders for commercial aircraft received in the first quarter by the "big four" builders totalled 129, virtually a standoff with 126 booked during the 1980 period. Orders for the first half were definitely down.

Both Lockheed and McDonnell Douglas confirmed that they had lost money in the first quarter on commercial aircraft production.

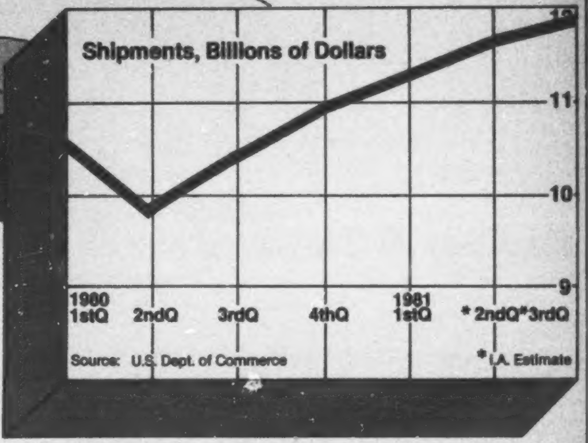
Only Boeing appeared headed for black ink in the first half.

Evidence mounted that commercial aircraft production no longer is an American prerogative. During each of the first two quarters, orders to Airbus Industrie, the European consortium, were substantially ahead of those to McDonnell Douglas and Lockheed. Boeing maintained a large, but narrowing, lead.



McDonnell Douglas' answer was to form a coequal joint venture with Fokker of The Netherlands contemplating the design, production and sale of a new airliner seating about 150 passengers. It will be known as the MDF-100.

QUARTERLY FORECAST



Instruments & Controls

In the instrumentation industries, it depends who you talk to. This is a diverse field, with different segments responding to the economic upheaval in different degrees.

In the process control field, the forecast for '81 is slow, no real growth. The second half of '81 may show a little growth which will be some compensation for the weak first half. Things will get better in 1982 and 1983. Spending will rise in some industries—metals and paper, among them—resulting in growth in real terms of from 2 to 6 pct.

In general, ferrous industry spending will be down this year. It will not pick up in '81, and the industry will show a 9 pct decline for that year. Nonferrous will be stronger, with a growth of about 15 pct in '81.

While the predictions for process control are not optimistic. Other instrumentation areas have a different view. Some areas have positive motivation from government regulation. This may change, but orders on the books will still result in some spending for pollution control and energy management.

In numerical control, there has been some holding back waiting for tax reforms for business. So, while there is a lull in orders at the current time, there is a lot of pre-order activity. And several sources indicate that business will rise dramatically when the Federal government makes up its mind.

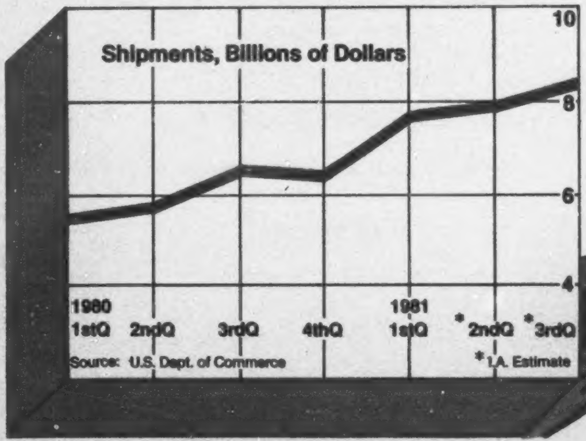
The first quarter of '81 was picking up from last year. Then the upward trend seemed to stall. March was good for machine tools, and that gives machine tool controls a good month 4 to 6 months later. In accordance with this lag, May was better than expected for some numerical control builders and June was encouraging.

So, while individual segments of the instrumentation and controls industry may be better than expected or worse, any real improvement is dependent on a general economic upturn and no one is sure when that will come.

Computers

"The economy is so volatile that we have discontinued forecasting." That statement from a leading computer manufacturer usually willing to comment on trends in the industry and the economy says it all.

It is not that the computer industry is in bad shape. This industry has weathered the economic decline better than most. It has continued to grow through 1980 and so far in 1981. But the upturn most sources predicted for the third quarter, then the fourth quarter of this year, still lies somewhere out of reach.



In 1980, the computer industry had a good year. Shipments increased by almost 24 pct over the previous year. In 1980, also, order levels were high, which has helped keep business going through the first half of '81.

Order rates are a bit softer this year, but growth will still be consistent through the year. 1981 should finish with the dollar value of shipments up about 25 pct.

The computer industry will grow no matter what happens; how fast it will grow is the question.

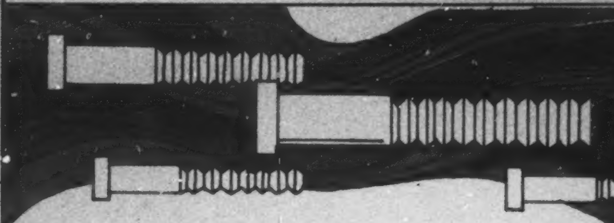
Growth is certain because of the nature of the products, which have become absolutely essential to every business. Coupled to the need for computers is the increasing economy of the products offered.

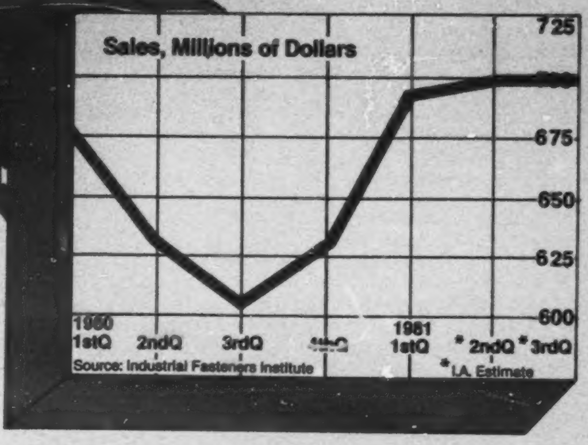
The computer companies, as a whole, return a significant portion of their revenue into research and development, which may account for their ability to consistently improve price/performance ratios.

There are some hot spots in the computer field. Growth in graphics is breaking all records. CAD/CAM companies hit 50 pct growth in a normal year; some had over 100 pct growth in the late '70s. As graphics use grows for business applications, 59 pct growth over the next five years seems likely.

Personal computers have also taken off. The only surprise here is that most are for business offices. So computers will be a strong market. They have survived the downturn; they will enjoy the upturn, when it comes.

QUARTERLY FORECAST





Source: Industrial Fasteners Institute

*I.A. Estimate

Fasteners

"We expected the second quarter to be significantly better than it's been so far," says one mechanical fastener company executive. "We now feel any really large increase in our kind of business may not develop until late in the year.

"Some major capital spending plans are now waiting for the interest rate to come down. We've heard a lot of people say it has to; it can't stay at 20 pct. So that kind of hesitation translates into a kind of marching in place for all of us," he says.

"Total fastener usage will be up 5 pct from 1980 over 1981 in the U.S.," says another. "Overall, usage will be up 9.2 pct in 1982 over 1981," he adds. And, in 1982 "we expect an increase of nearly 13 pct in automotive usage of mechanical fasteners," he says. But, "it's the President's tax package we're wondering about, like everybody else."

Other fastener companies also note that since the industry's problems with imports have not really been solved, any capacity problems next year could be handled by foreigners. Interest rates, again, may mean U.S. companies will not be able to finance the kinds of expansion required by a surge in both commercial and defense business.

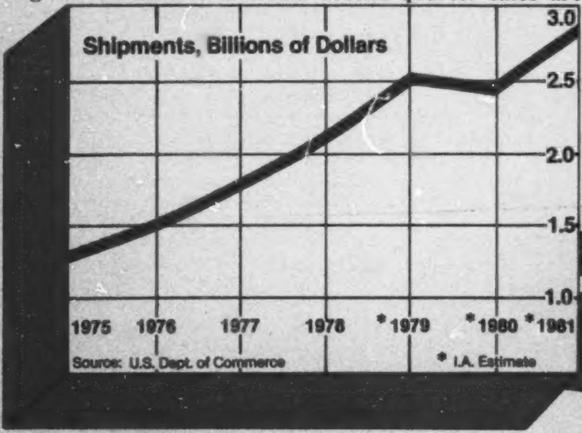
In general, however, the fastener industry is in far better shape than it was a year ago, when business dropped off to levels only matched by the Great Depression. With automotive, aerospace and defense expected to rise steadily, mechanical fastener companies look for equally steady increases in orders throughout the year.

The interest rate levels of the past year have made some in the business a little less than comfortable, but, except in terms of their own equipment purchases, such financial matters do not directly affect the purchases of nuts and bolts. It's what those nuts and bolts hold together—cars, planes, tanks and capital goods—that may be waiting for a drop in the rates as well as clarification on depreciation.

Screw Machine Products

When their first quarter sales totals were in, many executives in the screw machine products industry saw the results as a sign of better days not too far ahead.

As the second quarter drew to a close, they viewed that earlier increase in orders more as an isolated spurt than a significant near-term trend. Second quarter sales are down, they admit, but add that over the long run, their industry is in a gradual growth cycle.



Source: U.S. Dept. of Commerce

* I.A. Estimate

"In the second quarter we expect to see a small improvement over first quarter figures, but nothing very spectacular," said one official.

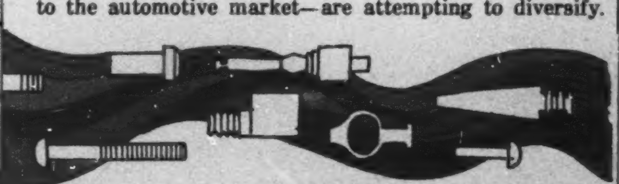
The third quarter is causing some concern because traditionally the industry has sagged during summer months. "We will see a drop in July," said another, "but whether that drop will be as great as it has been is questionable because the market is already depressed."

Most see little growth until the fourth quarter. The current market is especially hard to predict, they add, because orders are coming in sporadically.

"Everything right now is very volatile," reported one industry member.

Because of the depressed market and high interest rates, few screw machine product manufacturers are buying much capital equipment. "Many of the manufacturing facilities are ma and pa operations," said one manufacturer, "and this group just isn't buying machinery. The larger manufacturers, however, continue to buy the more sophisticated equipment."

To survive, many manufacturers—especially those tied to the automotive market—are attempting to diversify.

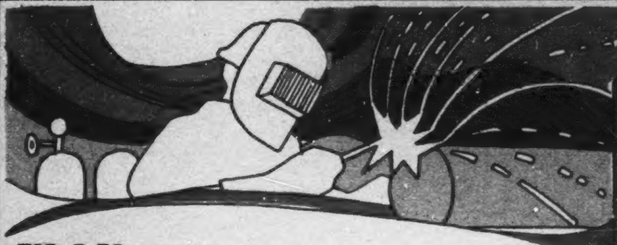


"Companies are really marketing now where before they were not," said one industry manager.

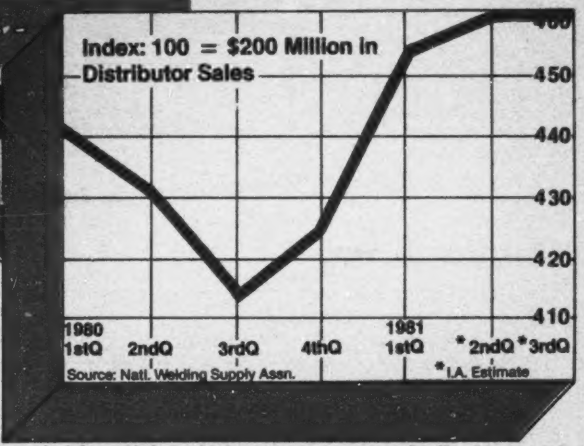
Not all manufacturers are doing poorly. Many in the Southwest and West are doing well. However, in today's fragmented marketplace, generalizations are difficult to make.

"Today it just gets down to individual firms," said one official. "A company in one town might be doing well, while the firm across the street might be losing its shirt."

QUARTERLY FORECAST



Welding



Like other industries, welding keeps having its ups and its downs. Still, welding's first quarter was a record and the second quarter was equally strong. Many executives feel that this surge cannot be maintained much longer and look for a drop in activity during the third quarter. Time will tell.

According to the National Welding Supply Association's (NWSA) Welding Supply Index, the old banner month had been October 1980 when the index hit 152.8. But, in March of this year the index soared to 162, then rose again (165.7) to another all-time high in April.

The base index figure used by NWSA is 100 and that represents the sales ($200 million) in 1977 of the distributor companies polled for sales information.

The strongest segment is the category covering gas and electric welding machines, Mig and Tig equipment and power supplies. This all seems to indicate a push for more semiautomatic and automatic welding equipment. Submerged-arc welding is also on the upswing.

The NWSA also reports that safety equipment, chemicals, abrasives and positioning equipment are also enjoying brisk activity. Although not so markedly improved, the sales of filler metals and electrodes as well as gases for welding and cutting are increasing, too.

Unlike many capital goods industries, welding statistics are very hard to track. The reason for this is that a large majority of product is shipped to thousands of small users.

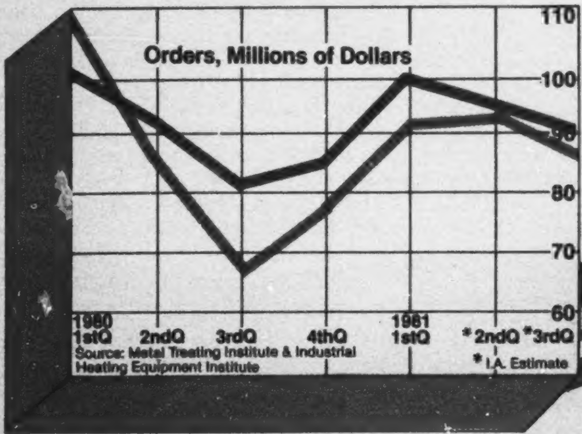
Even though several large fabricating shops have been shut down, welding remains strong in plants where the big contracts are being handled.

The first quarter 1981 was a record quarter for welding. The second quarter has held its own. Even though the third quarter appears pivotal, the climate looks very promising for a record year for the welding industry.

Heat Treatment

Industrial heating equipment manufacturers and the commercial heat treaters are showing good strength in spite of the strong economic tide working against them.

Domestic orders for heat processing equipment in the first quarter of 1981 were $91.8 million, a slide of about 16 pct below the orders for the first quarter of 1980. However, the industrial heating equipment producers point out that the first quarter of 1980 was an exceptional quarter for orders and is not a particularly good gage for comparison with the current trend.



There seems to be some validity to this observation in that the domestic orders for the second quarter, although complete figures are not yet available, appear to be holding up well. If the figures remain at the level projected ($92.8 million), this would be a gain of more than 9 pct over last year's figures of the same period.

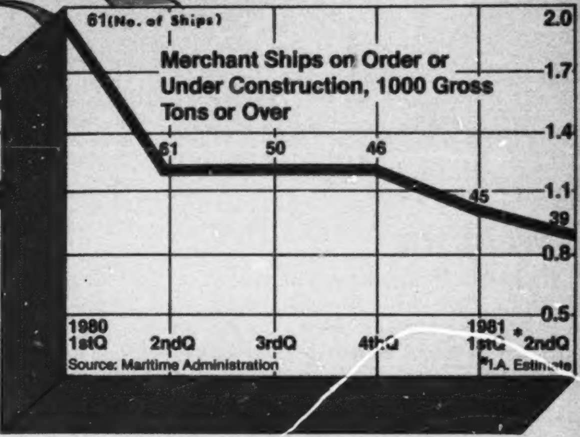
Some slippage is expected in the third quarter below that of the first and second quarters. However, here again, domestic orders are expected to be well above those reported for the third quarter of 1980 when they were only $66.1 million.

The commercial heat treaters, generally, are faring a bit better than the industries they serve. Their billings for the first quarter were only a cat's whisker above the billings for the first quarter of 1980—$101.1 million and $101.0, respectively.

The second quarter figures, although not completely tallied, should show a gain of about 5 pct over last year's billings for the same period. Similar strength is projected for the third quarter.

In both the domestic orders for heat processing equipment and in billing by the commercial heat treaters, the trends could best be described as "gentle improvement." However, in both instances, the earlier projections of a turnaround by about mid-year did not materialize, at least not to the full extent expected. Optimism has now been postponed until early or mid-1982.

QUARTERLY FORECAST



Source: Maritime Administration

*I.A. Estimate

Shipbuilding

The U.S. shipbuilding industry, in company with that of foreign nations, is becalmed.

Consider this fact: The U.S. Maritime Administration reports that in the entire calendar year of 1980 only 4 deep draft commercial vessels where ordered in the entire U.S.!

Meanwhile, the talk of expanding the U.S. Navy to a 600-ship fleet continues. But Congress has not gotten around to considering any proposals to accomplish this.

Undoubtedly, the U.S. Navy will be beefed up. And, probably there will be revised interest in breathing some life into the U.S. merchant shipping capacity.

But all this is in the future. So, the near-term outlook for shipbuilding is bleak. Long-term, it's highly promising. And, granting the time it takes from authorizing construction of a ship to its launching, long-term means 1983 or 1984.

And the big question is this: Will the U.S. have the skilled manpower and the technology to do the job? Shipyard employment is expected, by one source, to revive around the third quarter of '83. Meanwhile layoffs continue.

And the shipbuilders, to keep as busy as possible, are getting lots of experience—in building off-shore oil drilling rigs, tugs and barges, and other dollar-turning projects.

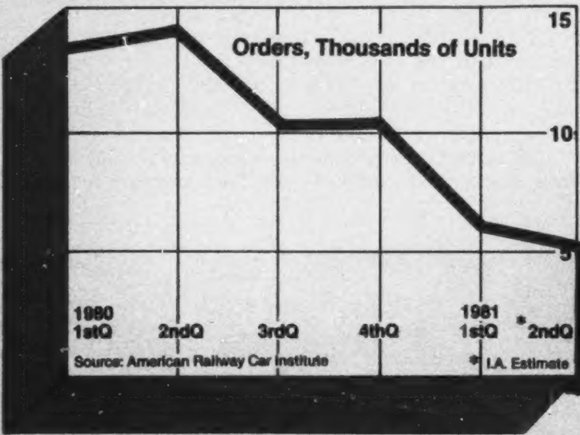
A spokesman for the shipbuilders expects the Navy building program to get out of the harbor in fiscal '82. This would mean that about 12 to 14 months later, orders would begin to flow to the builders.

Similarly, he expects that commercial shipbuilding activity, which, as noted above, is minimal at present, will begin to revive around the same time. Reason: There is only so much patching, retrofitting and conversion work that can be done on a tanker or cargo hauler before it's doomed to Davy Jones' locker.

Rail Cars

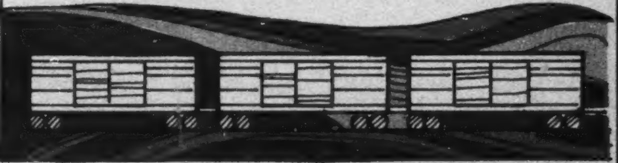
Rail freight car builders are in the doldrums. The new order rate is pathetic. The backlog of unfilled orders has shrunk drastically.

The outlook for the balance of '81 is described by one industry spokesman as "bleak." If things continue as they are going 1981 could set a new record—as the worst year since the days of the Great Depression in the 1930s.



Source: American Railway Car Institute

*I.A. Estimate



Consider these facts: New orders in '80 came in at about 14,000 cars in each of the first two quarters (see chart). In the third quarter they sagged to 10,600 and hit about that level in the fourth quarter.

In this year's first quarter they totaled only 6,465 units. And projecting April's dismal 1,762 cars through the entire second quarter—assuming May and June about equal April—the second quarter total will be only about 5,100.

If there's no pickup in the second half, the year would come in at about 21,000 to 25,000 units, far below last year's 46,000 units. And very far from the industry's great year of 1978, when 130,000 cars were turned out.

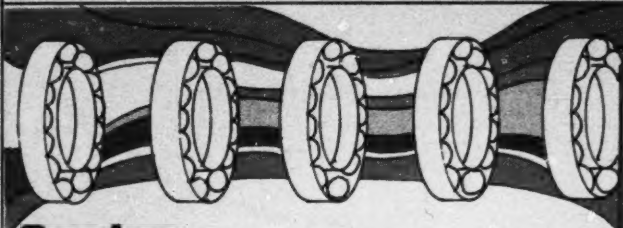
Through the first four months of '81 the builders received 8,227 new orders, compared to 18,558 for the same four months of '80—which was far from a banner period. The full impact of the recession hit the car builders in the second half of '80 and is obviously still continuing.

Naturally with so few new orders coming in, the builders are whittling away at their backlogs. In May, the industry backlog stood at 39,126 cars, contrasted with over 92,000 cars in the same month of '80.

Asked if high interest rates and expensive financing are slowing the new order flow, industry sources respond "to a degree." But they put the main blame on the 1979-80 recession, a cyclical drop in demand following several tremendous years of orders and deliveries and less activity by those who have cars built and then lease them to railroads and companies.

Also helping dampen demand was the bankruptcy of the Rock Island line which dumped a lot of cars on the market for buyers to gobble up.

QUARTERLY FORECAST



Bearings

The bearings industry turned in another flat performance in the second quarter, mirroring its results for the first three month span of 1981.

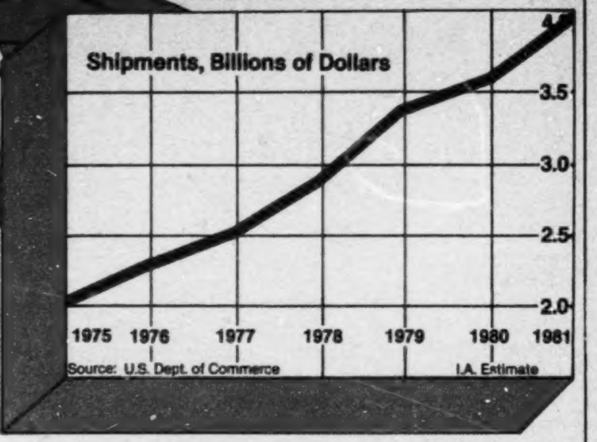
The overall results, however, tell one side of the industry's sales story and mask the fact that some manufacturers are thriving while others are just hanging on.

Bearing makers tied heavily to off-highway and automotive industries remain on the down slope, while bearings suppliers for the energy industries are doing well.

Aerospace, although not ordering as much as previous years, is still supporting a number of bearing manufacturers in style. "The aerospace industry continues to be strong," said one official.

Machinery and machine tool manufacturers are still buying and the robot and automated handling equipment manufacturers are boosting their purchases. New military expenditures are also pushing up bearing sales.

Bearing manufacturers, although buoyed by new orders in some areas, are not optimistic that sales will improve much through the remainder of this year. "There are orders out there," explained one manager, "although many of our markets are soft."



Source: U.S. Dept. of Commerce

I.A. Estimate

"We don't see farm machinery and automotive sales picking up the way we expected," said another. "We don't see much growth this year, but we are hopeful that 1982 will be a good year for us."

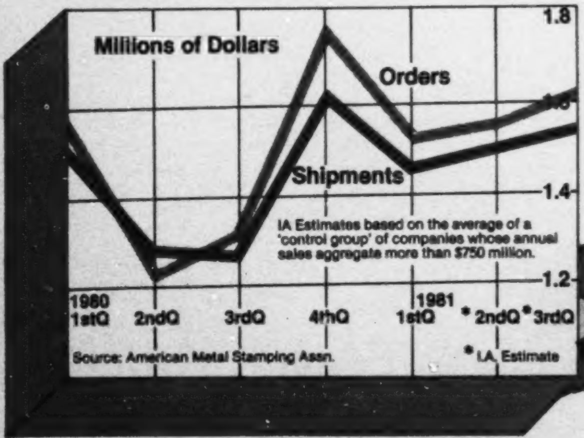
Interest rates have kept down capital expansion in a number of industries, said a third industry spokesman. "Machine tool sales have briefly slowed down, for example. However, we see interest rates dipping a bit and with increased depreciation allowances for machine tools coming later this year, expansion plans should pick up in 1982," he added.

Those firms hit by sagging markets are falling back on replacement sales, which usually increase during the industry's slow growth periods.

Stampings

Even the most optimistic executives in the stamping industry concede business, at best, is teetering on a seesaw.

Automotive markets are still the backbone of stamping and stampers are watching the 1982 cars cautiously. Production of the line prior to introduction has helped automotive stampers' order books so far, but should the 1982s stall, stampers say, things won't get much better.



IA Estimates based on the average of a 'control group' of companies whose annual sales aggregate more than $750 million.

Source: American Metal Stamping Assn.

* I.A. Estimate

Automotive still remains the worst-off of the multi-faceted stamping business. Since the buying public has not been kind to Detroit, Detroit has not been kind to stamping.

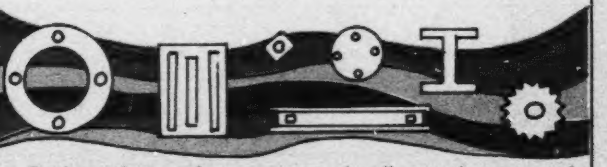
"We just don't have a strong way out backlog like we used to," notes one automotive stamping executive. "It's hard to tell about the '82s."

Says another exec, whose product lines is more diverse, "Everybody these days wants less inventory, so you have to hold it for them. With steel price increases that have occurred, our inventory costs have doubled."

The stampers, automotive ones particularly, are keeping a close eye on interest rates, too. Continued high borrowing costs, they know, will put a big crimp on auto sales, not to mention their own financing.

"There's still just too many unknowns," says one Midwestern executive. "The Arab World, the interest rates, inflation, People are marking time right now before they do anything."

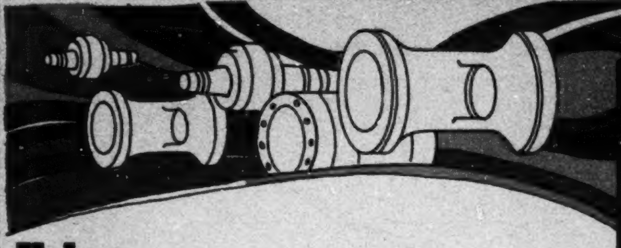
Order backlogs and shipments, most executives believe, are not exhibiting much of a trend in either direction right now.

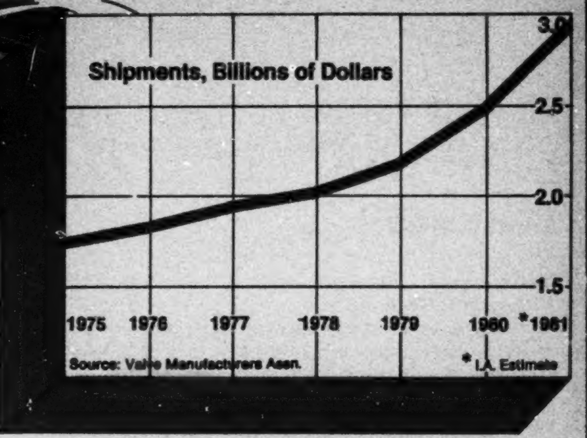


Rather, the market seems to be fluctuating up and down slightly, a pattern they fear could continue for several months.

Most of the executives believe the cost and pricing equations for their industry may have changed permanently. They recognize the permanence of high interest rates and higher material costs. Doing business just is a lot riskier today, they say.

QUARTERLY FORECAST





Source: Valve Manufacturers Assn.

* I.A. Estimate

Valves

Some of the nation's industrial valve makers have been turning it on all year and expect to keep running at full throttle throughout the third quarter. Others are seeing hardly a trickle.

Petroleum refining and chemical processing are still the busiest markets for the valve industry, largely because the refiners are still converting their facilities to produce more lead-free gas and to process the sour crudes.

"It's great to be busy," said one valve industry manager, but added a note of caution about the rising backlog of orders. "I keep looking at them and wondering when our foreign competitors are going to start pushing harder for some of that business. . . ."

Another industry member sees little reason for worry over imports: "Most of the overseas manufacturers are into the smaller, less critical areas of the market, valves for the household plumbing and so forth. I don't think they have the inclination or know-how to tackle much in our end of the business."

Still on the soft side are those manufacturers serving the utility industry.

"We don't see much on the domestic side," admitted one industry executive. "There's still some business overseas, but even that's starting to show signs of slipping."

His hopes for a big synfuels market are also beginning to sag, he said, noting that Reagan Administration has shown little indication that it plans to push the program as hard as former President Carter.

The Reagan Administration's budget-cutting has also created some long-term fears in the wastewater treatment market which turns in part on Federal funding for new water treatment plants.

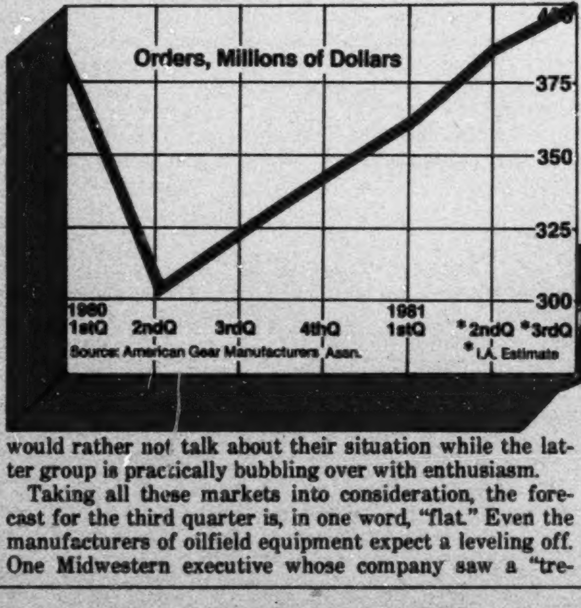
Although much of the Federal money for those programs is already earmarked, the funding legislation comes up for a reauthorization vote.

Gears

These are not exciting times for gear manufacturers supplying the construction equipment, automotive and recreational vehicle sectors.

Gear industry executives whose companies plunged into the oilfield equipment market, on the other hand, have found a new gold mine.

Put it this way—the former group of manufacturers would rather not talk about their situation while the latter group is practically bubbling over with enthusiasm.



Source: American Gear Manufacturers Assn.

* I.A. Estimate

Taking all these markets into consideration, the forecast for the third quarter is, in one word, "flat." Even the manufacturers of oilfield equipment expect a leveling off. One Midwestern executive whose company saw a "tremendous upsurge in orders this year"—because everything produced goes to the oil fields of Texas—predicts a third quarter that will be level or down from the second quarter.

He notes that the second quarter looked unusually good because the decontrol of oil spurred a surge of drilling activity. He doesn't foresee that same boom in the third quarter.

Another gear producer has to hope things get better very quickly after seeing his business drop off 30 pct so far this year.

But he is not optimistic about the third quarter because of the volatile prime rate.

"We're trying everything to keep business going," he comments. His markets include agricultural equipment, lawn and garden tractors, oilfield equipment, and construction and recreational vehicles.

A manufacturer supplying the business machine and oil machinery markets says his firm isn't directly affected by the high interest rates. In fact, his firm is beginning to see some traditional customers come back with more frequency.

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AFTER A LONG DROUGHT, ARE TINPLATE PRODUCERS READY FOR A COMEBACK?

Market shrinkage has produced a competitive situation. There exists a scramble for market share from tinplate and aluminum producers.

By George J. McManus

They say adversity builds character.

Tinplate producers hope this is true because their lives in recent times have been marked by one hard knock after another.

The drought of 1979 cut into can usage. Tight money is now causing canmakers to hold down inventories. Worse of all, aluminum has taken over about half the can market.

All of which has left most tin mill operators in a thoughtful state. "We're agonizing over some of these things," says Cornel Bolog, vice-president, commercial, Wheeling-Pittsburgh Steel Corp.

"The tin mill market for us is very soft," says R. D. Ridgeway, general manager, tin mill products, United States Steel Corp.

"It's not the happiest product in the stable," says T. C. Graham, president, Jones & Laughlin Steel Corp.

Not surprisingly, market shrinkage has produced a tense competitive situation. "There's a scramble among the tinplate producers for a share of the remaining business," says Mr. Graham.

National Steel Corp. seems to be doing a good job of scrambling. "We've got a solid order book through July," says R. E. Westergren, National's vice president, tin mill product sales. As of late May, National's shipping releases were lagging, but the company was clearly faring better than most competitors.

It is not a coincidence that National is equipped to continuously cast 75 to 80 pct of its container steel. Canmakers have expressed a preference for the continuously cast material. While they may question the validity of this preference, tin mills are under pressure to respond to it. That could mean heavy capital commitments for a market that hasn't been kind to steel.

Despite this prospect, there are no plans for dropping out of the tinplate business. "I think it's a situation where we have to have some patience and faith," says Mr. Graham. "Our own view is that aluminum is already the high priced container. People ignore costs for certain periods of time. . . ."

It is something of a paradox that aluminum has taken over the beverage can market partly because it is more expensive than steel. As scrap, an aluminum can is worth 1¢. A steel can is worth only ½¢ or ¼¢. Aluminum producers have energetically exploited this difference, buying back the old cans and setting up the machinery for recycling.

Coupled with anti-litter drives and mandatory deposit laws, the scrap values have contributed to aluminum's success in capturing about 80 pct of the beer and soft drink markets. Since these markets account for around 60 pct of all cans, the loss for steel has been massive.

Steel producers argue that the difference in scrap values has to reflect different starting costs. According to mill estimates, steel cans are priced about $4.50 a thousand under aluminum cans. Even with a premium price, say steel producers, aluminum producers must be facing a cost squeeze.

"I don't know what goes on in the minds of aluminum people," says Mr. Graham. "I'm not sure they're exactly exultant with the business they've got."

It's his feeling that relative costs must ultimately be reflected in material decisions.

The auto industry started to go overboard on aluminum until they began adding up costs, he states.

The slowdown in 1979 cut into can usage. Tight money is now causing canmakers to hold down inventories.

(Cont. from p. MP-7)

"Suddenly, the auto designers had their machining orders changed from reduce weight at any cost to reduce weight at minimum cost."

Something like that may happen in the container market but the trend today is in the other direction. Aluminum producers are thinking of expansion, not contraction.

"There's indications they're trying to invade the sanitary can market," says Sheldon Arnot, executive vice president, sales, Bethlehem Steel Corp.

Sanitary cans are used for food. These cans account for a third of the market and because of the strength requirement, are made of steel. New techniques for pressurizing food cans could open the field to other materials and designs.

New technology was one of the things that facilitated aluminum's push into the beverage market. Until a few years ago, beverage cans were made in three pieces. The bodies were formed into cylinders and joined along the sides.

A newer development is the two-piece drawn and ironed (D&I) can. In this, the can bottom and body are drawn from one piece of metal. No side seams are necessary and the can walls can be lightened.

"The steel companies basically stayed with the three-piece cans because most of the can makers at that time were all in the three-piece can business," says H. M. Love, chairman of National Steel.

Meanwhile, the breweries and the soft drink companies were putting in their own D&I lines. Aluminum producers were in the thick of this activity. When the beverage market went to the D&I can, aluminum was well-positioned to take over.

"The aluminum people had a number of years of learning experience," says Mr. Love. "We were starting with a relatively newer product and one that requires a great deal of sophistication. So it isn't just the recycling. Where the market slipped away from us, was in the three-piece versus the two-piece."

Only two tinplate companies—U. S. Steel and National Steel—have supplied much material for D&I lines. Kaiser Steel Corp. on the West Coast has a new slab caster, but Kaiser is not big in the beverage field.

"We made the decision 10 or 12 years ago to concentrate our efforts on the food industry," says Niels Peak, general manager of tin mill products for Kaiser.

National Steel Corp.'s experimental canmaking line assists customers in the development of new metal forming, cleaning, treating, protective and decorative materials technology.

Steel producers have not given up on the can market. U. S. Steel has developed a water based lubricant that makes it possible to dispense with tin coatings on sheet going into D&I lines. The absence of tin is expected to reduce costs by $3 per thousand cans. The uncoated product also gets away from the problems caused by tin when cans are recycled in furnaces.

"We feel that our future for the beer and beverage can lies in CYCLITE," says Mr. Ridgeway of U. S. Steel (CYC comes from recycle; LITE means lightweight).

For use in beverage cans, CYCLITE must be given a protective coating of lacquer or epoxy. The best coatings require two spray and bake cycles. Down the road is an electrolytic process which deposits an instant coating with no voids.

"If that coating were available today commercially, I think this can would fly right away," says Mr. Ridgeway.

In theory, the D&I process should be tailor-made for steel. The three-piece beverage can does not make maximum use of the strength in steel. Even with double reduction, the sheet is heavier than it needs to be. The excess weight is squeezed off in D&I lines. Steel use is cut from 100 lb. per thousand cans to under 70 lb. per thousand.

To prove out CYCLITE or any other material in the can market takes careful testing and an awful lot of time. U. S. Steel announced its new product in August of 1980. The program has now reached the stage where one can maker has put in commercial equipment to make a CYCLITE can. A commercial run was scheduled for the late spring and samples were then to go out for testing.

"When they do that, it would be six months for soft drink and three months for beer to determine if the can is a viable container," says Mr. Ridgeway.

If all goes well, there will then be the job of persuading canmakers and beverage companies to switch back to steel. National steel, which has its own D&I program, does not expect instant success.

(Cont. on p. MP-11)

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Year to Date Metal Can Shipments Report

	Pct Shipped by Product		Millions of Cans Shipped			Thousands of Base Boxes Shipped		
	1979	1980	1979	1980	Pct Change	1979	1980	Pct Change
Total Metal Cans Shipped			89,344	87,947	−1.56	193,357	189,614	−1.94
By Market								
For Sale			**62,854**	**60,768**	**−3.32**	**139,883**	**134,315**	**−3.98**
Beverage			43,472	42,946	−1.21	88,245	87,181	−1.21
Food (Includes Pet Foods)			14,790	13,692	−7.42	36,352	33,260	−8.51
General Packaging			4,592	4,130	−10.06	15,286	13,874	−9.24
For Own Use			**26,490**	**27,179**	**+2.60**	**53,474**	**55,299**	**+3.41**
Beverage			10,970	12,293	+12.06	22,272	24,955	+12.05
Food (Includes Pet Foods)			15,243	14,621	−4.08	29,986	29,260	−2.42
General Packaging			277	265	−4.33	1,216	1,084	−10.86
By Product								
Beverage	**60.9**	**62.8**	**54,442**	**55,239**	**+1.46**	**110,517**	**112,136**	**+1.46**
Beer, total			28,731	29,498	+2.67	58,324	59,881	+2.67
Three-piece cans			1,684	581	−65.50	—	—	—
Two-piece cans: Steel			5,669	3,294	−41.89	—	—	—
Aluminum			21,378	25,623	+19.86	—	—	—
Soft drink, total			25,711	25,741	+0.12	52,193	52,255	+0.12
Three-piece cans			8,064	3,871	−52.00	—	—	—
Two-piece cans: Steel			5,351	5,916	+10.56	—	—	—
Aluminum			12,296	15,954	+29.75	—	—	—
Food	**33.6**	**32.1**	**30,033**	**28,313**	**−5.73**	**66,338**	**62,520**	**−5.76**
Baby Foods			787	867	+10.17	1,815	1,906	+5.01
Coffee			679	654	−3.68	2,903	2,788	−3.96
Dairy Products			943	826	−12.41	1,473	1,340	−9.03
Fruit, Fruit Juices			4,885	4,531	−7.25	12,005	11,460	−4.54
Meat & Poultry			1,589	1,462	−7.99	3,079	2,997	−2.66
Pet Food			2,968	2,889	−2.66	5,619	5,408	−3.76
Seafoods			1,089	1,170	+7.44	1,887	2,046	+8.43
Shortening			241	184	−23.65	1,248	902	−27.72
Vegetables, Veg. Juices			10,787	9,796	−9.19	24,205	21,764	−10.08
Other Foods, Including Soup			6,065	5,934	−2.16	12,104	11,909	−1.61
General Packaging	**5.4**	**4.99**	**4,869**	**4,395**	**−9.74**	**16,502**	**14,958**	**−9.36**
Aerosol			2,202	2,004	−8.99	5,215	4,798	−8.00
Motor Oil			546	452	−17.22	2,191	1,842	−15.93
Paint & Varnish			873	803	−8.02	5,920	5,411	−8.60
Other Nonfoods			1,248	1,136	−8.97	3,176	2,907	−8.47
By Material Used								
Steel			54,609	45,386	−16.89	105,854*	90,561*	−14.45
Aluminum			34,735	42,561	+22.53	49,286*	55,975*	+13.57
Weight of aluminum cans shipped (thousands of lbs)			2,274,048	2,549,004	+12.09	—	—	—

Source: Can Manufacturers Institute

*The figures in this section do not add to the total in Sections I, II, and III due to a different method of calculating material used for beverage cans.

(Cont. from p. MP-11)

"Now that we have a two-piece material, there's only limited amounts of it available," says Mr. Love. "We've really just started having some progress."

The steel D&I material is attractively priced, he continues, but there are other factors. It takes time and money to convert D&I lines to steel. "There's over-capacity out there right now," says Mr. Love. "He can't sell his aluminum cans. Why should he go out and spend more money to make a conversion?"

In this setting, tinplate producers seem to be concentrating on maintaining their position in the sanitary and miscellaneous can markets. Together, these account for about 40 pct of the total container business.

Steel retains a dominant position in sanitary food cans, but the situation is far from static. The Food and Drug Administration is pushing for the elimination of lead solder as the seaming material for sanitary cans. As a result, there is a swing toward welded seams. One welding process-Soudronic-was developed by the Swiss. Continental Can Co. has come up with its own welding method.

"There are six to ten welding lines in operation," says Mr. Peak of Kaiser. "Another 20 have been ordered."

Also important is increased use of the draw-redraw process for shallow food cans. "The tuna can is going to draw-redraw," says Mr. Peak.

Tin-Free Steel (TFS) is steadily gaining ground, particularly as a material for the ends of food cans. Introduced a number of years ago, TFS has a flash coating of chrome and chrome oxide.

Another entry in the tin-free picture is National's nickel-coated steel. Steel men have been trying for years to get away from tin with its fluctuating price and remote source of supply. The price of tin is now around $6 a pound but it has gone as high as $8 in recent times.

"People were concerned about what was going to be the price of tin," says Mr. Love. "It was having an effect on our competitive position. So we developed this technology as a defense against a rising price of tin."

National says the substitution of nickel for tin gives a 10 pct cost reduction. Originally developed for the D&I market, the nickel product is seen tying in nicely with the welded sanitary can. No special treatment is required before welding. The chrome coated steel must be scraped at the edges before welding.

One batch of the nickel coated steel was produced for testing last year. Another run was scheduled for June of 1981.

Apart from new products and new manufacturing techniques, there is a continuing trend toward lighter, thinner cans. The weight reduction and processing methods impose tough quality standards on materials.

"You really need a good clean product," says Mr. Love of National. "You need a cast product."

Mr. Peak of Kaiser says this: "Continuous casting is definitely required on the draw-redraw can," Cast material is "not absolutely necessary" for the welded can, he adds, but it is preferred by most can makers.

Others have different views. "It isn't mandatory to have continuous casting," says Sheldon Arnot of Bethlehem Steel. "You can achieve the quality without it. There is a perception."

Aluminum pushed into the beverage can market because of advanced technology.

Very much in agreement is Mr. Graham of Jones & Laughlin. "There may very well be a preference," he says. "I would regard that as the result of very aggressive selling rather than a factual thing."

For drawing applications, U. S. Steel has developed two ingot steels: molten aluminum—rimmed killed (MA-RK); and molten aluminum—rimmed semikilled (MA-RS). The MA-RK grade found considerable use in D&I cans and the MA-RS steel was developed to provide a less costly material for the same application.

U. S. Steel's continuously cast RIBAND material has also done well in can making applications. "For the D&I can, it has been extremely successful," says Mr. Ridgeway.

Whatever the merits of these questions, food processors cling to their preferences and perceptions. Years ago, someone got the notion that silicon was a bad actor in food cans. As a result, the food people want their continuously cast material to be aluminum killed.

"Our tests show there shouldn't be any difference," says Mr. Love. "We're using silicon with tuna." There have been no problems in five years of shelf life, he notes.

Neither aluminum nor the D&I can has made a dent in the food can market. Beans and other foods are cooked in the cans. After cooking, the cooling of the cans creates a vacuum. The D&I can—steel or aluminum—will crumble under the outside pressure.

There is work on a system for pressurizing the can by injecting a drop of liquid nitrogen. If that proves practical, the market will be open to D&I cans.

Mr. Love feels his company is prepared for this contingency and any other. "We have fully assessed the future conditions in the sanitary food market and have developed a capability of supplying any product that is necessary," he says.

In the food market, he adds, steel has adapted to new technology. Aluminum faces the same kind of battle in food that steel faces in the beverage market, he says.

As Mr. Love has noted, one of the problems for steel in the beverage situation was that they were tied to the established can companies. These companies did not encourage materials suppliers to get involved in the can making process. Aluminum producers, with less to lose, had no inhibitions about going directly to the beverage companies with new technology.

That picture has completely changed. Self-manufacture has reduced the market share of the can companies. And these companies now invite initiative by suppliers.

"It's totally wide open at this time," says Mr. Love. National has set up its own can making line for test programs at Weirton, W. Va. U. S. Steel's CYCLITE is a venture into the can making process.

Another change may or may not be permanent. In the past, there were preparations all along the line for the packing season. Inventories of cans and tinplate were ready when the crops came in. This year, with money costs high, there is a general tendency to hold down inventories.

"They are going to squeeze the pack into a shorter time frame," says Mr. Love. "They're gambling. Everybody seems to be gambling. If everything works out, it's probably going to be something that we are going to have to live with for the next few years."

Mr. Love is bullish about the export market. After a big year in 1980, this has become very competitive. However, long-term needs of lesser developed countries are seen generating good business for U.S. suppliers. ☐

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copper forecasters. The overall picture anticipates reasonably good supply/demand balance in the five-year period, allowing for the fact that neither production nor consumption seldom keep to parallel lines.

Mr. Munroe suggested this may be the case during or after the fourth quarter because economic recovery would spur demand at a time when inventories are tight at producer and consumer levels and idle capacity is limited.

Silver production up in indifferent market

While Congress and the Reagan Administration wrestle with the pros and cons of selling silver from the national stockpile, the silver market continues to paint a backdrop of declining prices, declining industrial consumption, indifferent speculator interest—and projections of increased production in 1981.

The Washington-based Silver Institute has projected a 7 pct increase in world mine production of silver to 354 million troy ounces. This would more than make up for the 14.1 million ounce drop last year to 331 million ounces.

The Institute also reported that U.S. refiners' inventories rose by an average of 575,000 ounces a month in the first third of 1981 compared with 350,000 ounces a month in the same 1980 period (when speculation-fueled record high prices were drawing more silver in than consumers were buying).

The Silver Institute's projections are sharply upward right through 1984, with a big 10 pct jump in production projected for 1982 that seems to be saying "stockpile release advocates take notice." Smaller 5 pct and 2 pct increases are projected for 1983 and 1984 respectively.

World mine production of silver due to rise 7 pct this year.

The nearly 60 million ounce increase projected for 1982 over 1980 reflects mainly a 22.6 million ounce gain projected for Mexico and a 16 million ounce gain for the U.S.

Richard L. Davies, executive director of the Silver Institute, told industry figures at the trade group's annual meeting in New York last month that silver consumption is showing some resilience after the "shock punch" of last year's skyrocketing silver prices.

U.S. industrial consumption of silver took a 40 million ounce nosedive last year. Mine strikes pulled domestic mine production lower by 22 pct to 29.6 million ounces, but the lure of higher prices during the speculative binge early in the year boosted old scrap recovery by 63 pct.

New ideas? How about mini-mill on a ship?

If the mountain won't come to the steel mill, move the mill to the mountain.

This thinking is involved in a new steel concept devised by Ulme International, Inc. Ulme has drawn up plans for a mini-mill that would be built on a ship.

The floating mill would have an electric furnace, a continuous caster and a bar mill. It would be capable of turning out 100,000 tons a year of rod, rebar and wire rod products. All facilities would be mounted on rails.

The basic idea is to provide mobility in reaching both scrap sources and markets. Apart from this flexibility, Ulme notes, the ship base would get away from high real estate costs. The company points out that medium size tankers are obsolete and readily available.

The idea originated with Ulme's participation in new steel projects in Nigeria. That country's civil war left numerous sunken hulks off the coast. Disturbances in other countries have also left a residue of wrecked ships.

The concept calls for providing underwater demolition teams to go after sunken scrap. When one source was exhausted, the mill would hoist anchor and move on to another area. In politically disturbed regions, "a small detachment of military guards could be stationed aboard for protection."

Ulme is still working on a mini-mill project for the Pittsburgh area. This has been delayed by development work on a rotary continuous caster. The company recently entered into a joint venture RENOCI, a Paris-based French corporation with operations in South America.

Free world steel output drops 3.8 pct

Crude steel output of twenty-nine countries who report to the International Iron and Steel Institute (IISI) dropped 3.8 pct, comparing the first five months of this year as opposed to the same period last year.

The cumulative total for the first five months of this year (see table) was 192.7 million metric tons, compared with 200.4 million metric tons in '80.

Crude Steel Output

First Five Months

Millions of Metric Tons

	1981	**1980**	**Pct Change**
EEC	52.7	56.8	−7.2
USA	49.6	47.4	+4.6
Japan	41.4	48.2	−14.1
Others	48.9	47.9	+2.1
Total	**192.7**	**200.4**	**−3.8**

Source: IISI

The U.S. showed an increase of 2.2 million tons or 4.6 pct. Countries in the European Economic Community (EEC) showed a decrease of 4.1 million metric tons or 7.2 pct. Japan had a decrease of 6.8 million metric tons or 14.1 pct.

Scrap summary

The **Pittsburgh** market is quiet just prior to the industrial lists. Although prices are off on some interim industrial sales, brokers look for a modest upward movement on the next buying round.

Though **Chicago** area mill buying has slowed, scrap production by metalworking plants is falling even faster.

As a result, prices are holding and some steelmaking grades may begin to advance slightly.

In the **Philadelphia** market, prices held steady in a slow week. "I think we've bottomed out price-wise, at least temporarily," said one broker.

Mill buyers seem to agree. One pointed to "resistance to sell at these prices" on the part of his suppliers, but added that supply was adequate to maintain current melt shop levels.

In a very slow market, both *Iron Age* prices remained at their previous levels. The No. 1 heavy melting composite is $89.17. The No. 2 bundles composite is $61.17.

Correction: At Youngstown, effective June 1, shoveling turnings were $29-$30.

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	251	255	275	300
Buffalo	66	67	51	68
Pittsburgh	439	444	420	485
Youngstown	135	134	115	139
Cleveland	180	181	150	174
Detroit	170	175	153	181
Chicago	631	637	498	615
Cincinnati	106	104	116	104
St. Louis	92	95	82	102
Southern	238	245	279	272
Western	148	150	148	160
U.S. Production	2,456	2,487	2,287	2,600

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective June 15, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,456	2,487	59,570	55,002
Capability Utilization Rate	82.1	83.1	84.9	78.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	21.739	23.776
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 89.17	$ 89.17	$ 78.17	$ 99.83
No. 2 bundles	$ 61.17	$ 62.17	$ 53.83	$ 73.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 99.50	$99.50	$ 80.50	$108.50
No. 1 steel, Philadelphia	79.50	79.50	83.50	88.50
No. 1 steel, Chicago	88.50	88.50	70.50	102.50
No. 1 bundles, Detroit	91.50	91.50	71.50	108.50
Low Phos., Youngstown	96.50	96.50	80.50	109.50
No. 1 mach'y cast., Pgh	99.50	99.50	92.50	104.50
No. 1 mach'y cast., Phila.	117.50	117.50	120.50	121.50
No. 1 mach'y cast., Chi.	124.50	124.50	122.50	127.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective June 15, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	84.70-85.00	83.00-85.00	6/15/81
Lead	38.00	36.00-38.00	6/ 3/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	722.00	702.00	2/21/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$149.50
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$471.75
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$420-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$10.40
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

June 8—562.92
June 9—569.05
June 10—567.52
June 11—566.04
June 12—564.51

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70
No. 2 copper wire	61
Light copper	52
No. 1 composition	70
No. 1 comp. turnings	68
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	31
Radiators	53

Aluminum

New mixed clips	36	—37
Old sheet	32	—33
Old cast	32	—33
Clean dry borings	34	—35

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	43	—44
No. 1 composition	58	—59
No. 1 composition turn'gs	56	—57
Cocks and faucets	41	—42
Clean heavy yellow brass	36	—37
Brass pipe	41	—42
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

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Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to	$100.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	118.00 to	119.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	19.00 to	20.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	43.00 to	44.00
Low phos. punchings plate	117.00 to	118.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	111.00 to	112.00
Rails, 2 ft. and under	118.00 to	119.00
Scrap rails, random lgth.	100.00 to	101.00
RR specialties	114.00 to	115.00
No. 1 machinery cast	99.00 to	100.00
Cupola cast	92.00 to	93.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	700.00 to	710.00
18-8 turnings	600.00 to	610.00

Chicago

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles (auto)	109.00 to	110.00
No. 2 dealer bundles	64.00 to	65.00
Unburned bundles	57.00 to	58.00
No. 1 busheling	92.00 to	93.00
Shredder scrap	91.00 to	92.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	67.00 to	68.00
Low phos. forge crop	114.00 to	115.00
Low. phos. punchings plate ¼ in. and heavier	123.00 to	124.00
Low phos. 2 ft. and under	116.00 to	117.00
No.1 RR hvy. melting	92.00 to	93.00
Scrap rails, random lgth.	89.00 to	90.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	119.00 to	120.00
RR couplers and knuckles	115.00 to	116.00
RR car axles	169.00 to	170.00
No. 1 machinery cast	124.00 to	125.00
Cupola cast	104.00 to	105.00
Stove plate	99.00 to	100.00
Steel car wheels	108.00 to	109.00
Stainless		
18-8 bundles and solids	675.00 to	685.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to	$ 81.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	104.00 to	107.00
No. 2 dealer bundles	53.00 to	56.00
No. 1 busheling	99.00 to	102.00
Shredder scrap	85.00 to	88.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	54.00 to	57.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	97.00 to	100.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	117.00 to	120.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	118.00 to	121.00
Cupola cast	78.00 to	81.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to	$ 72.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	89.00 to	90.00
Drop forge flashings	69.00 to	70.00
Machine shop turn.	38.00 to	39.00
Mixed borings and turn.	34.00 to	35.00
Shoveling turnings	38.00 to	39.00
Cast iron borings	42.00 to	43.00
Heavy breakable cast	64.00 to	65.00
Mixed cupola cast	79.00 to	80.00
Automobile cast	106.00 to	107.00
Stainless		
18-8 bundles and solids	660.00 to	670.00
18-8 turnings	510.00 to	520.00
430 bundles and solids	145.00 to	155.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 dealer bundles	58.00 to	59.00
Machine shop turnings	22.00 to	23.00
Shoveling turnings	36.00 to	37.00
Low phos. plate	96.00 to	97.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	83.00 to	84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	60.00 to	61.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	106.00 to	107.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	25.00 to	26.00
Mixed bor. and turn.	25.00 to	26.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	25.00 to	26.00
Cut structural & plates, 2 ft. and under	120.00 to	121.00
Low phos. punchings plate	120.00 to	121.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	91.00 to	92.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	124.00 to	125.00
Rails, 18 in. and under	125.00 to	126.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	90.00 to	91.00
Structural and plate, 2 ft. and under	98.00 to	99.00
Rails, 2 ft. and under	76.00 to	77.00
Scrap rails, random lgth.	56.00 to	57.00
No. 1 machinery cast	96.00 to	97.00
No. 1 cupola cast	64.00 to	65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 89.00 to	$ 90.00
No. 2 heavy melting	79.00 to	80.00
No. 1 dealer bundles	89.00 to	90.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	91.00 to	92.00
Elec. furnace, 3 ft. & under	79.00 to	80.00
Structural and plate, 2 ft.	109.00 to	110.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	88.00 to	89.00
Scrap rails, random lgth.	86.00 to	87.00
Rails, 18 in. and under	110.00 to	112.00
Angles and splice bars	97.00 to	98.00
No. 1 cupola cast	101.00 to	102.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	66.00 to	67.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	22.00 to	23.00
Cast iron borings	22.00 to	23.00
Low phos. 18 in. and under	107.00 to	108.00
Rails, random length	80.00 to	81.00
Rails, 2 ft. and under	103.00 to	104.00
No. 1 cupola cast	74.00 to	75.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	53.00 to	55.00
No. 1 dealer bundles	77.00 to	79.00
No. 2 bundles	31.00 to	33.00
No. 1 busheling	71.00 to	73.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	58.00 to	60.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 55.00 to	$ 57.00
No. 2 hvy. melting	47.00 to	49.00
No. 1 dealer bundles	42.00 to	44.00
No. 2 dealer bundles	27.00 to	29.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 53.00 to	$ 55.00
No. 2 hvy. melting	43.00 to	45.00
No. 1 dealer bundles	40.00 to	42.00
No. 2 dealer bundles	23.00 to	25.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to	118.00
No. 1 cupola cast	122.00 to	124.00

Seattle

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	66.00 to	68.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	81.00
Bush. new fact. unprep'd.	70.00
Machine shop turn.	43.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	88.00
No. 2 bundles	57.00 to	58.00
Machine shop turn.	17.00 to	19.00
Crushed turnings	40.00 to	42.00
Shredder scrap	95.00 to	97.00
Cut structural plate 2 ft. and under	112.00 to	113.00
Unstripped motor blocks	79.00 to	81.00
Cupola cast	95.00 to	97.00

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	264	251	294	257
Buffalo	71	66	87	64
Pittsburgh	411	439	456	362
Youngstown	135	135	151	102
Cleveland	168	180	180	145
Detroit	156	170	174	141
Chicago	599	631	647	477
Cincinnati	103	106	103	106
St. Louis	94	92	100	86
Southern	246	238	261	270
Western	156	148	160	139
U.S. Production	2,403	2,456	2,613	2,149

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore b. . premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective June 22, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,403	2,456	61,973	56,770
Capability Utilization Rate	80.3	82.1	84.8	78.1

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 89.17	$ 89.17	$ 96.17	$ 76.50
No. 2 bundles	$ 61.17	$ 61.17	$ 67.50	$ 53.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 99.50	$99.50	$105.50	$ 78.50
No. 1 steel, Philadelphia	79.50	79.50	84.50	80.50
No. 1 steel, Chicago	88.50	88.50	98.50	70.50
No. 1 bundles, Detroit	91.50	91.50	98.50	71.50
Low Phos., Youngstown	96.50	96.50	101.50	80.50
No. 1 mach'y cast., Pgh	99.50	99.50	104.50	91.50
No. 1 mach'y cast., Phila	117.50	117.50	119.50	115.50
No. 1 mach'y cast., Chi	124.50	124.50	129.50	122.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective June 22, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.75-85.00	83.00-85.00	6/22/81
Lead	38.00-39.00	38.00	6/18/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$462.00
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$9.97
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

June 15—575.16
June 16—574.18
June 17—572.92
June 18—572.16
June 19—575.52

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1c per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	74
No. 2 copper wire	65
Light copper	56

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70
No. 2 copper wire	61
Light copper	52
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	31
Radiators	52
Aluminum	
New mixed clips	36 —37
Old sheet	32 —33
Old cast	32 —33
Clean dry borings	33 —34

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum	
Segregated clippings	38 —39
Mixed L.C. clips	30 —31
Old sheets and cast	23 —24
Boring and turnings	20 —21
Duraluminum clippings	38 —39
Copper and Brass	
No. 1 copper wire	66 —67
No. 2 copper wire	55 —56
Light copper	53 —54
Radiators	43 —44
No. 1 composition	58 —59
No. 1 composition turn'gs	56 —57
Cocks and faucets	41 —42
Clean heavy yellow brass	36 —37
Brass pipe	41 —42
New soft brass clippings	51 —52
Yellow brass rod ends	43 —44
Lead	
Heavy soft lead	15 —16
Whole batteries	7 — 8
Type metal	16 —17
Electrotype	29 —30
Nickel	
Nickel solids	160 —175
Nickel rod ends	160 —175
Nickel sheets, clips	160 —175
Nickel turnings	110 —115
Zinc	
New zinc clippings	19 —20
Old diecast zinc	12 —13

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EFFECTIVE JUNE 22, 1981

MATERIALS NEWSFRONT

(Effective June 22, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 99.00 to	$100.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	118.00 to	119.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	113.00 to	114.00
Machine shop turn.	19.00 to	20.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	43.00 to	44.00
Low phos. punchings plate	117.00 to	118.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	111.00 to	112.00
Rails, 2 ft. and under	118.00 to	119.00
Scrap rails, random lgth.	100.00 to	101.00
RR specialties	114.00 to	115.00
No. 1 machinery cast	99.00 to	100.00
Cupola cast	92.00 to	93.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	700.00 to	710.00
18-8 turnings	600.00 to	610.00

Chicago

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles (auto)	109.00 to	110.00
No. 2 dealer bundles	64.00 to	65.00
Unburned bundles	57.00 to	58.00
No. 1 busheling	92.00 to	93.00
Shredder scrap	91.00 to	92.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	67.00 to	68.00
Low phos. forge crop	114.00 to	115.00
Low. phos. punchings plate ¼ in. and heavier	123.00 to	124.00
Low phos. 2 ft. and under	116.00 to	117.00
No.1 RR hvy. melting	92.00 to	93.00
Scrap rails, random lgth.	89.00 to	90.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	119.00 to	120.00
RR couplers and knuckles	115.00 to	116.00
RR car axles	169.00 to	170.00
No. 1 machinery cast	124.00 to	125.00
Cupola cast	104.00 to	105.00
Stove plate	99.00 to	100.00
Steel car wheels	108.00 to	109.00
Stainless		
18-8 bundles and solids	675.00 to	685.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to	$ 81.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	104.00 to	107.00
No. 2 dealer bundles	53.00 to	56.00
No. 1 busheling	99.00 to	102.00
Shredder scrap	85.00 to	88.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	54.00 to	57.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	97.00 to	100.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	117.00 to	120.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	118.00 to	121.00
Cupola cast	78.00 to	81.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to	$ 72.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	89.00 to	90.00
Drop forge flashings	69.00 to	70.00
Machine shop turn.	38.00 to	39.00
Mixed borings and turn.	34.00 to	35.00
Shoveling turnings	38.00 to	39.00
Cast iron borings	42.00 to	43.00
Heavy breakable cast	64.00 to	65.00
Mixed cupola cast	79.00 to	80.00
Automobile cast	106.00 to	107.00
Stainless		
18-8 bundles and solids	660.00 to	670.00
18-8 turnings	510.00 to	520.00
430 bundles and solids	145.00 to	155.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 dealer bundles	58.00 to	59.00
Machine shop turnings	22.00 to	23.00
Shoveling turnings	29.00 to	30.00
Low phos. plate	96.00 to	97.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	83.00 to	84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	56.00 to	57.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	106.00 to	107.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	25.00 to	26.00
Mixed bor. and turn.	25.00 to	26.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	25.00 to	26.00
Cut structural & plates, 2 ft. and under	120.00 to	121.00
Low phos. punchings plate	120.00 to	121.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	91.00 to	92.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	124.00 to	125.00
Rails, 18 in. and under	125.00 to	126.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	90.00 to	91.00
Structural and plate, 2 ft. and under	98.00 to	99.00
Rails, 2 ft. and under	76.00 to	77.00
Scrap rails, random lgth.	56.00 to	57.00
No. 1 machinery cast	96.00 to	97.00
No. 1 cupola cast	64.00 to	65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 91.00 to	$ 92.00
No. 2 heavy melting	81.00 to	82.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	91.00 to	92.00
Elec. furnace, 3 ft. & under	79.00 to	80.00
Structural and plate, 2 ft.	109.00 to	110.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	91.00 to	92.00
Scrap rails, random lgth.	86.00 to	87.00
Rails, 18 in. and under	109.00 to	110.00
Angles and splice bars	99.00 to	100.00
No. 1 cupola cast	98.00 to	99.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 72.00 to	$ 73.00
No. 2 hvy. melting	66.00 to	67.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	47.00 to	48.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	22.00 to	23.00
Cast iron borings	22.00 to	23.00
Low phos. 18 in. and under	108.00 to	109.00
Rails, random length	80.00 to	81.00
Rails, 2 ft. and under	103.00 to	104.00
No. 1 cupola cast	74.00 to	75.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	53.00 to	55.00
No. 1 dealer bundles	72.00 to	74.00
No. 2 bundles	31.00 to	33.00
No. 1 busheling	72.00 to	74.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	130.00 to	135.00
Mixed cupola cast	56.00 to	58.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 54.00 to	$ 56.00
No. 2 hvy. melting	46.00 to	48.00
No. 1 dealer bundles	41.00 to	43.00
No. 2 dealer bundles	26.00 to	28.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 52.00 to	$ 54.00
No. 2 hvy. melting	42.00 to	44.00
No. 1 dealer bundles	39.00 to	41.00
No. 2 dealer bundles	22.00 to	24.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to	118.00
No. 1 cupola cast	122.00 to	124.00

Seattle

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	66.00 to	68.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	81.00
Bush. new fact. unprep'd.	70.00
Machine shop turn.	43.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	88.00
No. 2 bundles	57.00 to	58.00
Machine shop turn.	17.00 to	19.00
Crushed turnings	40.00 to	42.00
Shredder scrap	95.00 to	97.00
Cut structural plate 2 ft. and under	112.00 to	113.00
Unstripped motor blocks	79.00 to	81.00
Cupola cast	95.00 to	97.00

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STEEL PRICES

Codes identify Producers listed in the Key on page 136. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N A = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$366.00
N4	$346.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$420.00
W8	$400.00
S1	$420.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$406.00
C6	$420.00
B3	$417.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$436.00
Midwest	
W8, W5	$459.00
S1, U1	$459.00
R3	$436.00
West	
B3	$451.00
C6	$469.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	22.85
U1	20.40
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	22.15
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	22.15
C6	21.90
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	19.50
J3	19.50
Midwest	
A7	18.45
D1	19.50
S1, J3, D1	20.80
W3	20.80
N4	17.50
W5	20.80
U1	19.50
B3, G2, I3, I4, M2, R3, J3, G3	20.80
West	
K1	20.00
B3	23.55
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
J3	Cmp*
U1	29.75
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	32.00
J3	Cmp*
T4	Cmp*
West	
U1	29.75
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	20.80
A7	19.50
S1	20.80
I3	19.50
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	32.00
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.20
G4	25.80
U1	27.40
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
J3	Cmp*
S1	39.90
Midwest	
I4	41.75
U1	41.75
S1	37.65
J3	Cmp*

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	19.50
J3	19.50
U1	19.50
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	20.80
S1, W5, D1	20.80
J3	19.50
I4	19.50
West	
U1	20.00
K1	20.00
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	23.15
J3	23.15
Midwest	
B3, I3, G3, R3, M2, U1(2)	24.65
G2, W3, M11	24.65
I4	22.00
J3, A7	23.15
S1, W5, D1	24.65
West	
U1	23.65
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2), J3	27.15
Midwest	
J3, D1	25.25
I3, W5, S1	27.15
U1, A7, R3, Y1	25.25
G2, W3, M11	27.15
West	
K1	25.75
South	
U1	25.25
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	24.65
S1	26.50
Long-Terne, Midwest	
W5	28.30
A7, U1	25.85
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	20.85
U1	20.85
Midwest	
A7, N4	20.85
U1	20.85
K2	20.85
J3	20.85
West	
C6	21.45
B3	21.75
U1	21.60
South	
G7	20.85

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	17.30
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	22.80
R5	22.80
B3(3), J3	22.80
U1, C10	22.80
Midwest	
A7, C20	22.80
N4	22.80
W8, U1, I3, I4	22.80
R3, T10	22.80
K2	22.80
West	
B3	22.80
T10	14.175
C6	24.45
U1	22.80
B3	23.55
South	
A8	22.80
A7	22.80
C16	22.80
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	31.25
C2	23.025
M9, W10, T11, S8	29.50
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5, W10, Y1, W8, R3	31.00
C2	24.675
B1	19.80
L2	30.75
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	31.25
West	
B5	31.20
B5	34.90
R3	30.45-33.40
South	
B5	32.85
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	24.85
I3, R3, C10, T11, W8	24.85
I4	24.85
J3	24.85
T11	30.60
West	
B3	24.85
B5	18.50
C6	26.60
U1	24.85
B3	25.85
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	35.20
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.45
T11, S8	33.20
C10	30.60
Midwest	
B5, R3, C10	34.85
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	34.65
B5	35.10
West	
R3	34.55-36.60
B5	35.20
B5	38.25
South	
S16	28.075
C16	28.00
B5	36.75

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	23.25
Midwest	
A7, B3, G3, R3, G2, S1	21.70
I3, U1, W8, I4, W5	21.70
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	21.75
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	29.55
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	25.35
U1	25.65
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	25.65
J3	24.20
K2	24.20
South	
U1	25.65
A8	22.85
West	
C6	24.95

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STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Bliss & Laughlin Steel Co., Los Angeles
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp.
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
	City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta		26.66	30.99	35.15	38.60	35.56	33.90	22.26	44.02	53.07	59.65	66.10	77.21
Baltimore		28.22	32.95	36.68	38.86	35.48	33.17	24.14	44.44	53.53	55.94	68.16	71.88
Birmingham		25.41	29.02	34.50	36.31	33.01	35.14	22.91	42.92	40.00	54.48	53.70	77.77
Boston		28.82	33.40	39.96	36.98	36.05	25.09	43.70	53.17	58.36	59.84	66.36	73.05
Buffalo		29.36	35.05	39.16	39.13	36.48	34.85	24.89	43.24	53.31	55.38	65.43	71.81
Chicago		23.92	29.24	31.38	32.53	29.15	29.12	19.41	39.95	44.49	50.24	56.21	62.30
Cincinnati		24.22	28.66	31.21	32.45	30.46	29.44	19.25	40.77	45.15	55.46	57.22	63.59
Cleveland		29.17	35.35	39.04	37.15	33.81	34.54	24.62	43.78	47.91	54.51	61.82	[illegible]
Denver		29.24	36.52	38.62	39.98	35.38	33.25	24.80	46.09	54.89	61.11	68.77	75.82
Detroit		23.96	26.20	31.50	32.42	31.02	29.42	17.72	40.67	45.10	50.60	57.12	63.38
Houston		25.95	31.86	36.17	40.28	33.12	33.03	23.24	48.22	56.21	62.47	69.26	76.47
Kansas City		26.48	31.96	[illegible]	36.60	30.86	29.86	21.66	42.87	47.46	53.17	59.61	67.56
Los Angeles		28.77	34.57	33.33	43.55	39.61	38.43	36.76	49.28	63.13	69.58	76.47	84.26
Memphis		28.85	31.27	35.48	36.63	35.07	33.22	23.82	43.74	54.16	59.74	65.11	74.44
Milwaukee		31.69	29.13	31.36	32.13	26.31	29.16	19.14	40.41	44.29	45.70	55.98	62.16
New York		28.45	30.08	34.34	44.36	30.29	28.69	24.29	48.01	53.93	59.20	68.62	74.73
Philadelphia		26.97	33.04	35.89	39.02	34.19	33.85	23.91	45.27	53.52	56.52	69.38	72.17
Pittsburgh		29.77	36.03	38.85	39.01	34.88	35.48	27.07	44.60	57.19	63.94	62.38	72.51
Portland		27.31	34.20	38.83	37.86	31.97	36.20	53.64	50.70	52.94	59.12	58.00	....
San Francisco		28.97	31.76	36.67	43.92	33.40	35.07	25.00	47.58	61.94	66.89	75.40	83.98
Seattle		28.40	34.44	36.36	43.03	32.29	38.79	35.42	52.63	62.08	67.30	76.09	63.00
Spokane		21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis		24.40	31.68	31.93	32.91	29.53	29.52	21.16	40.91	43.31	50.44	57.40	63.72
St. Paul		25.26	29.33	24.00	32.70	30.96	29.47	19.01	42.79	43.63	50.90	57.88	64.12

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2 15/16; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

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NOTE

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JULY

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Chilton's

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

JULY 15, 1981

WILL CONGRESS OPEN A BROADER TAX UMBRELLA FOR R&D?

HOW LIGHTWEIGHT MATERIALS GIVE POWER TRANSMISSION A LIFT

FLUOR SHAKES THE MONEY TREE IN METALS AND MINERALS

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IRON AGE

VOL. 224, NO. 20

JULY 15, 1981

COVER STORY

53 Will Congress broaden the tax umbrella over R&D?
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35 Steelmakers question effectiveness of TPM
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43 Mr. Stanley goes to Washington to talk to Congress
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49 How one expert sees domestic product quality
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52 Power transmission vs. energy costs
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Is Detroit shrinking or just changing its shape?

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc. New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $30 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

$4.42 billion at month's end, the NMTBA said. That is 10 months' worth of work at 1981's shipment rate to date.

Fastener makers seek duty extension

Fastener makers have asked the U.S. International Trade Commission (ITC) for a three-year extension of special duties.

A 15 pct duty on imports of nuts and bolts was imposed by former President Carter in January 1979 after an ITC investigation found that the domestic industry had been seriously injured by imports.

Unless extended, the special duties are due to expire at the end of 1981.

The petition was filed by a coalition of companies and unions representing the domestic industry.

"The domestic fastener industry, while still suffering substantial injury from imports, has made serious efforts to use the period of import relief to recover its economic health and to adjust to import competition," reads the petition.

U.S. Imports of Bolts, Nuts and Screws from People's Republic of China

Thousand Pounds

	Bolts & Large Screws*	Nuts**	Total
1977	—	12	12
1978	—	68	68
1979	666	462	1,128
1980	1,823	5,422	7,245
1980 1st Qtr.	656	1,085	1,741
1981 1st Qtr.	689	1,464	2,153

*Includes TSUSA items 646.4920, 646.5400, 646.6320 and 646.6340. **Includes TSUSA item 646.5600. Source: U.S. Department of Commerce.

It also says that the domestic industry increased its capital investments in 1979-1980 by 12.7 pct over the previous two-year period, despite a decline in profits, production and employment and despite prevailing high interest rates.

Imports supplied close to 50 pct of U.S. market in 1980, the petition also notes.

Between 1978 and 1980 domestic production of nuts, bolts and large screws dropped 22 pct to 918 million lbs.

There are a number of favorable signs which would permit the industry to regain its economic health if the special import duties were extended for three years. These include structural improvements within the industry, substantial industry efforts to increase competitiveness, the rebound in U.S. auto production and the introduction of new high-speed, nut-forming and bolt-making machinery, the petition points out.

"Extension of import relief for an additional three-year period is critical to enable the domestic fastener industry substantially to complete the adjustment process," it adds.

An interesting development in very recent times has been the growth of the People's Republic of China (PRC) as a force in nuts and bolts.

"It appears that the People's Republic of China is emerging as a major new supplier of industrial fasteners to the U.S. market," says the petition. "Imports of nuts, bolts and large screws from the PRC, although still modest, have jumped by over 10,000 pct since 1978. It is our understanding that about 25 pct of fastener production in the PRC is now exported, most of it to the United States."

Japan is still the U.S. industry's number one competitor, however. Japan accounted for about 60 pct of our imports in 1980. That was equal to 531 million lbs out of a total of 963 million lbs, reports the Industrial Fastener's Institute, IFI.

Revise Clean Air act, says EPA head

"Mid-course corrections" are needed to reform existing deficiencies in the Clean Air Act, Environmental Protection Agency chief, Anne Gorsuch, says.

Speaking in Philadelphia, the EPA Administrator said a "frank examination" of the Act "reveals staggering complexities and conflicts—sagas of intolerable time delays and investment losses—and a sad legacy of distrust between industry, the states and the Federal government."

For example, she described EPA's current permitting process for new construction as a complex, lengthy and duplicative process. "The present process discourages the rollover of older, polluting facilities and actually prevents or delays the construction of new and cleaner plants," she said. "It's simply bad environmental policy and bad economics."

She added that the permit process can add two to three years of lead time for a typical manufacturing plant. "Time is money and such delays are definitely inflationary," she said.

Ms. Gorsuch reiterated the Reagan Administration's intention to send a legislative package of proposed clean air revisions to Congress. She could not, however, set a date since the White House has already missed a self-imposed June 30 deadline.

"The permit process can add two or three years of lead time."

Anne Gorsuch,
EPA chief

Forgers get new data on open die forgings

Custom sales of open die forgings for 1980 were close to $925 million and bookings were over $1 billion, reports the Forging Industry Association (FIA), Cleveland. That's the first detailed reporting of statistics for open die forging, says R. W. Atkinson, FIA executive vice president.

"This new FIA annual report contains data from companies believed to represent 97 pct of total industry sales," Mr. Atkinson adds.

"Statistics for custom open die forgings will now be issued monthly showing sales dollar volume of open die forging orders booked and the sales dollar volume of open die forging shipments of various metals.

"These new statistics," Mr. Atkinson stresses, "are not to be confused with the long-standing 'impression die' forging statistics that have been issued in the past by FIA. Open die and impression die forging represent two distinct forging processes."

The other two generally recognized forging technologies, cold forging and rolled ring, will probably not be gathered for separate reports.

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MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	268	264	307	257
Buffalo	74	71	84	64
Pittsburgh	389	411	473	362
Youngstown	135	135	154	102
Cleveland	180	168	161	145
Detroit	173	156	173	141
Chicago	595	599	633	477
Cincinnati	107	103	94	106
St. Louis	91	94	93	86
Southern	250	246	265	270
Western	157	156	151	139
U.S. Production	2,419	2,403	2,588	2,149

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective June 29, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,419	2,403	64,392	58,473
Capability Utilization Rate	80.8	80.3	84.6	77.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 90.17	$ 89.17	$ 92.50	$ 76.50
No. 2 bundles	$ 61.17	$ 61.17	$ 64.83	$ 53.17

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$99.50	$101.50	$ 78.50
No. 1 steel, Philadelphia	79.50	79.50	84.50	80.50
No. 1 steel, Chicago	88.50	88.50	91.50	70.50
No. 1 bundles, Detroit	91.50	91.50	98.50	71.50
Low Phos., Youngstown	96.50	96.50	101.50	80.50
No. 1 mach'y cast., Pgh	94.50	99.50	99.50	91.50
No. 1 mach'y cast., Phila	117.50	117.50	118.50	115.50
No. 1 mach'y cast., Chi	124.50	124.50	129.50	122.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective June 29, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	82.20-85.00	82.80-85.00	6/29/81
Lead	38.00-39.00	38.00	6/18/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$428.75
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$415-$425
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$9.30
Vanadium	$4.57
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

June 22—572.82
June 23—574.16
June 24—573.38
June 25—571.52
June 26—569.69

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	64	64

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	64
Light copper	55

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	69
No. 2 copper wire	60
Light copper	51
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	36	—37
Old sheet	32	—33
Old cast	32	—33
Clean dry borings	33	—34

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	66	—67
No. 2 copper wire	55	—56
Light copper	53	—54
Radiators	43	—44
No. 1 composition	58	—59
No. 1 composition turn'gs	56	—57
Cocks and faucets	41	—42
Clean heavy yellow brass	36	—37
Brass pipe	41	—42
New soft brass clippings	51	—52
Yellow brass rod ends	43	—44

Lead

Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30

Nickel

Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115

Zinc

New zinc clippings	19	—20
Old diecast zinc	12	—13

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MATERIALS NEWSFRONT

(Effective June 29, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	86.00 to 87.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	116.00 to 117.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	120.00 to 121.00
Heavy turnings	86.00 to 87.00
No. 1 RR hvy. melting	111.00 to 112.00
Rails, 2 ft. and under	120.00 to 121.00
Scrap rails, random lgth.	103.00 to 104.00
RR specialties	117.00 to 118.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles (auto)	107.00 to 108.00
No. 2 dealer bundles	64.00 to 65.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	92.00 to 93.00
Shredder scrap	90.00 to 91.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	67.00 to 68.00
Low phos. forge crop	114.00 to 115.00
Low. phos. punchings plate ¼ in. and heavier	124.00 to 125.00
Low phos. 2 ft. and under	117.00 to 118.00
No.1 RR hvy. melting	92.00 to 93.00
Scrap rails, random lgth.	89.00 to 90.00
Reroller rails	119.00 to 120.00
Rails, 2 ft. and under	119.00 to 120.00
RR couplers and knuckles	115.00 to 116.00
RR car axles	169.00 to 170.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	104.00 to 105.00
Stove plate	99.00 to 100.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	675.00 to 685.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	104.00 to 107.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	99.00 to 102.00
Shredder scrap	85.00 to 88.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	97.00 to 100.00
Low phos. 2 ft. punchings	117.00 to 120.00
Electric furnace bundles	117.00 to 120.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	118.00 to 121.00
Cupola cast	78.00 to 81.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to $ 72.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	89.00 to 90.00
Drop forge flashings	69.00 to 70.00
Machine shop turn.	38.00 to 39.00
Mixed borings and turn.	34.00 to 35.00
Shoveling turnings	38.00 to 39.00
Cast iron borings	42.00 to 43.00
Heavy breakable cast	64.00 to 65.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	106.00 to 107.00
Stainless	
18-8 bundles and solids	660.00 to 670.00
18-8 turnings	510.00 to 520.00
430 bundles and solids	145.00 to 155.00

Youngstown

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 dealer bundles	58.00 to 59.00
Machine shop turnings	22.00 to 23.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	96.00 to 97.00
Electric furnace bundles	96.00 to 97.00
Galvanized bundles	83.00 to 84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	56.00 to 57.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles	106.00 to 107.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	120.00 to 121.00
Low phos. punchings plate	120.00 to 121.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	91.00 to 92.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	127.00 to 128.00
Rails, 18 in. and under	128.00 to 129.00
Steel axle turnings	71.00 to 72.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 87.00 to $ 88.00
No. 2 heavy melting	81.00 to 82.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	89.00 to 90.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	81.00 to 82.00
Structural and plate, 2 ft.	109.00 to 110.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	86.00 to 87.00
Rails, 18 in. and under	109.00 to 110.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	80.00 to 81.00
No. 2 bundles	43.00 to 44.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Low phos. 18 in. and under	100.00 to 101.00
Rails, random length	80.00 to 81.00
Rails, 2 ft. and under	103.00 to 104.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 36.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	53.00 to 55.00
No. 1 dealer bundles	72.00 to 74.00
No. 2 bundles	31.00 to 33.00
No. 1 busheling	72.00 to 74.00
Shredder scrap	72.00 to 74.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	130.00 to 135.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 54.00 to $ 56.00
No. 2 hvy. melting	46.00 to 48.00
No. 1 dealer bundles	41.00 to 43.00
No. 2 dealer bundles	26.00 to 28.00
Machine shop turn.	[illegible] to 12.00
Cast iron borings	[illegible] to 12.00
No. 1 cupola cast	[illegible] to 112.00

Los Angeles

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	42.00 to 44.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	22.00 to 24.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	116.00 to 118.00
No. 1 cupola cast	122.00 to 124.00

Seattle

No. 1 hvy. melting	$ 90.00 to $ 92.00
No. 2 hvy. melting	79.00 to 81.00
No. 2 bundles	66.00 to 68.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	90.00
No. 1 dealer bundles	83.00
No. 2 bundles	81.00
Mixed steel scrap	81.00
Bush. new fact. prep'd.	81.00
Bush. new fact. unprep'd.	70.00
Machine shop turn.	43.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	86.00 to 88.00
No. 2 bundles	57.00 to 58.00
Machine shop turn.	17.00 to 19.00
Crushed turnings	40.00 to 42.00
Shredder scrap	96.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	79.00 to 81.00
Cupola cast	96.00 to 97.00

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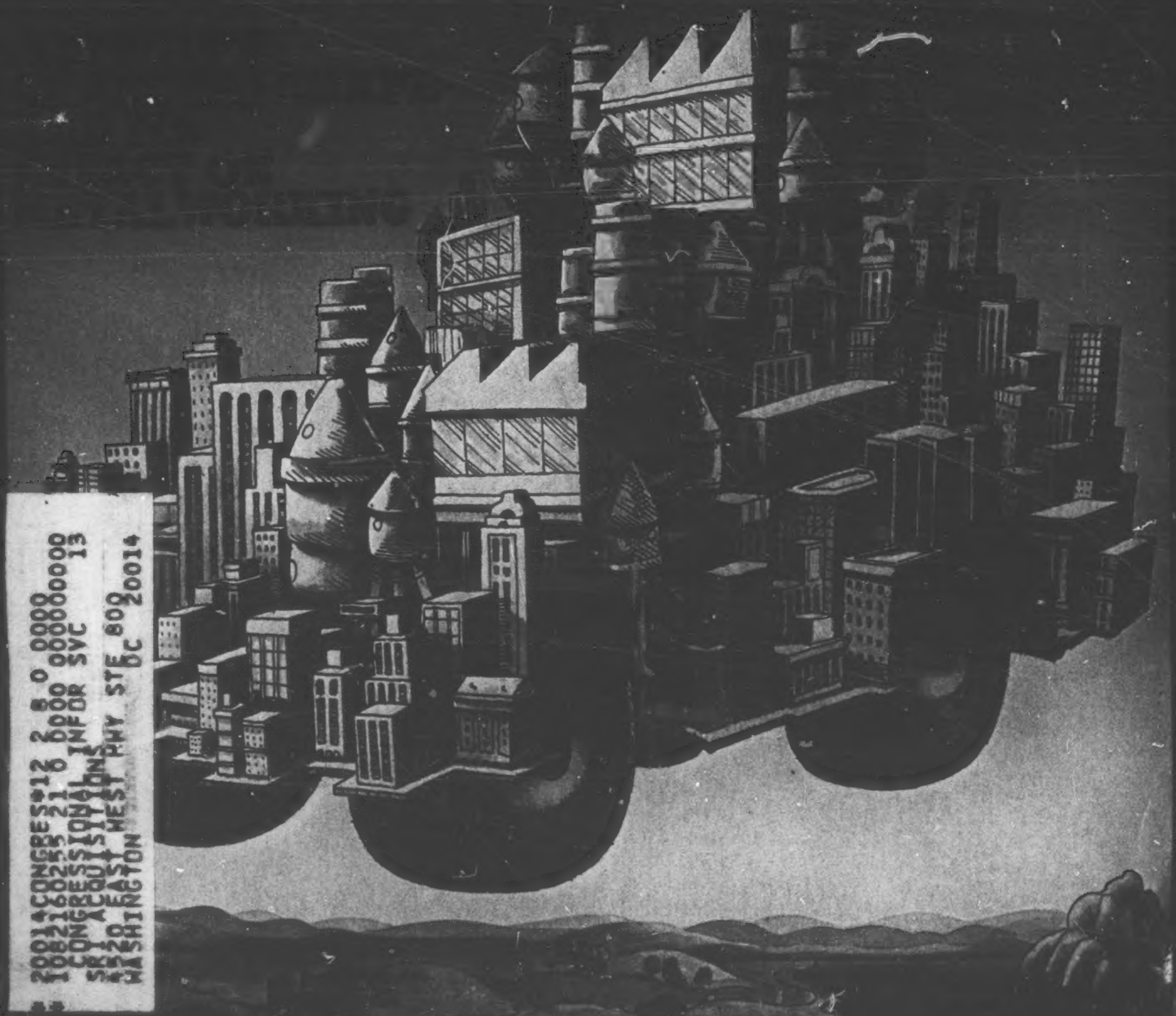

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IRON AGE

VOL. 224 NO. 21

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Management in America: Part III
Rebuilding competitive strength

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $80 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

IS DETROIT AUTOMAKING SHRINKING OR JUST CHANGING ITS SHAPE?

Car sales dwindle as a period of retrenchment in the U.S. industry looms over the next decade.

By Bryan H. Berry

America's largest industry is changing its shape. Its cars and sales have shrunk as fuel prices have soared. Its multinational companies are expanding their foreign operations in search of lower labor rates and growing markets.

Shortly before President Carter left office, Neil Goldschmidt, Secretary of Transportation, submitted to him *The U.S. Automobile Industry, 1980.* The report took a hard look at the prospects for the automobile industry and saw serious problems looming in the next decade:

—"Worldwide we anticipate that the auto market will largely be a replacement market and that the decade ahead is likely to see little net growth in world auto sales.

—"Each of the geographic submarkets of the world is expected to provide the predominant share of the autos needed to meet demand in that submarket; thus, we do not expect world trade in autos to provide a safety-valve for excess domestic production.

—"We anticipate there may be overcapacity in world auto supply, particularly in view of the internationalization and homogenization of the market.

—"We project the loss of roughly 500,000 manufacturing jobs in the next ten years. The result could be enormous social and economic dislocation as the nation's industrial base permanently shrinks."

February saw the release of an even gloomier report, by Arthur Andersen & Co.: *Worldwide Competitiveness of the U.S. Automotive Industry and its Parts Suppliers During the 1980s.* The accounting firm surveyed government officials and parts supplier, capital equipment, and financial management. These groups predicted:

—"Passenger car market growth in the U.S. will average less than one percent per year during the 1980s.

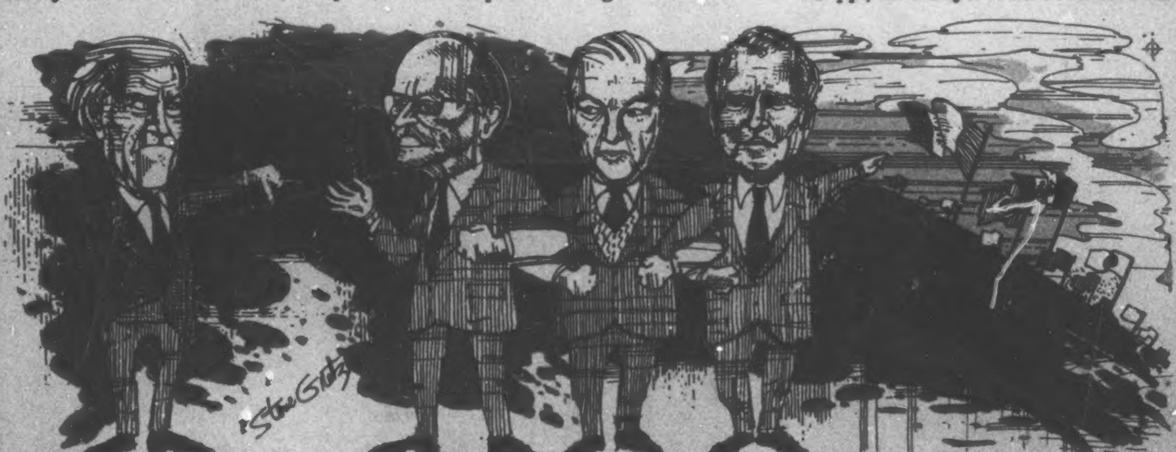
—"U.S. vehicle manufacturers will continue to rely heavily on production facilities in foreign markets, as compared to foreign manufacturers, which export to foreign markets."

—Foreign parts and machine tools will capture an increasing share of the U.S. market. The University of Michigan, which worked with Arthur Andersen on the forecast, later released a specific projection: By 1985, between 15 and 35 pct of all car parts will be sourced outside the U.S., compared with about 5 pct today.

—Total employment of American automakers will permanently drop by 200,000 from 1979's 1 million. Employment in the parts supplier industry will drop by 400,000 from 1979's 2 million.

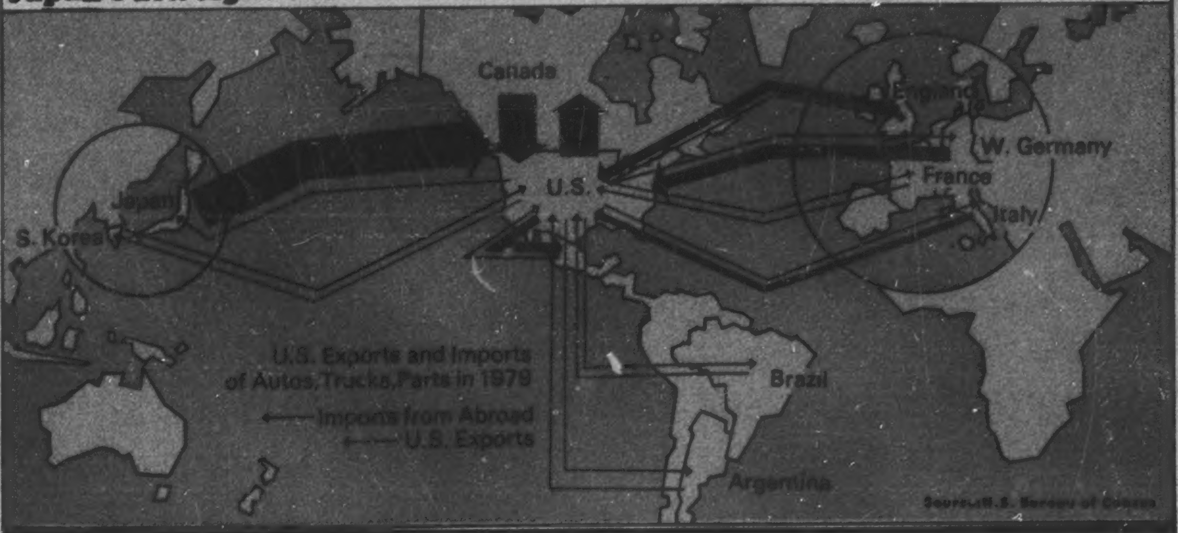
These are dire predictions for an industry that is related to roughly one of every six jobs in the country. A crippled auto industry would severely diminish national defense capability. Just how accurate are these forecasts? How are troubled automakers affecting parts and materials suppliers and capital equipment makers? How are all three reacting to the trends identified by Goldschmidt and Andersen?

"I disagree with Andersen's method of relying on opinions," says Arvid Jouppi, an analyst with John Muir &



The Big 3 chairmen have been firing away at the labor rates of Fraser's UAW. Only West German automakers earn more.

Japan Outweighs Other Nations in the U.S. Automotive Market



Source: U.S. Bureau of Census

Co. "The suppliers are in the pit right now, so if you ask them how things are, naturally they see an insurmountable mountain in front of them. Their major customers, the leading American automakers, together lost $4.2 billion last year and $600 million in the first quarter."

"As I talk at seminars to suppliers, I don't get many people arguing with the report's findings," says Peter Van Hull, a partner in the Detroit office of Andersen's management information consulting division. "The suppliers are so concerned with trying to survive in the short term that they're not looking at the long term. They're not investing enough, not taking enough risks. We could wake up at the end of the decade and see that many of our parts suppliers are foreign."

The U.S. auto industry is well into an unprecedented $80 billion capital spending program through the mid-80s to retool for the smaller cars demanded by high gas prices. It needs more money than it's ever needed at a time when its losses have been greatest; the resulting cash shortages have meant delays and postponements in the spending programs. The shortages have also meant automotive is looking to save money any way it can. It is searching the world for favorable financing arrangements with governments, parts suppliers, and machine tool makers.

"To ease their financial burdens some auto manufacturers are looking to their suppliers to expand their research and product development activities in areas historically reserved to the primary automakers," says the DOT report. "Those suppliers that are able to accept additional financial burdens, and the attendant risk, will also be in a position to garner an increased share of future profits."

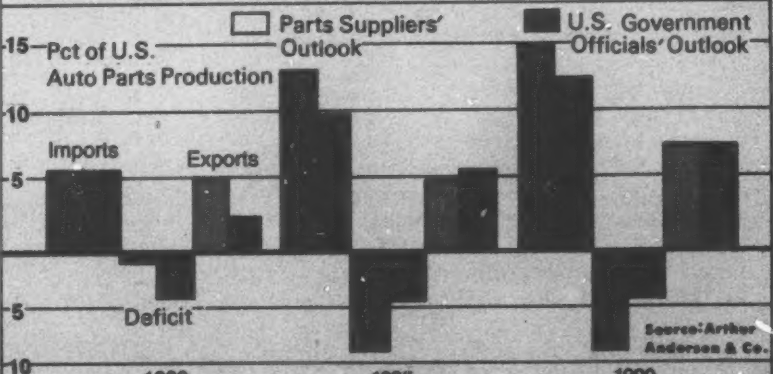
"Some suppliers view automotive as a growth market; others want to give up their dependence on it," says Walter Schenker of Drexel Burnham Lambert, the Wall Street consulting firm. "Some diversified suppliers are unhappy with the returns from automotive and the cyclicality of the market. Others are looking at this period to make money as auto companies do more outside sourcing. Clearly we're in an environment where capital is an important part of business."

Automakers are considering more outside sourcing primarily because of cost. "Parts suppliers can produce comparable parts at costs lower than auto companies," says Mr. Schenker, "because their labor costs are lower and productivity is higher."

Even though smaller suppliers may not have much spare cash, there is still a place for them, Mr. Schenker and Mr. Jouppi agree. "Small suppliers have a far better chance now than they've ever had," says Mr. Jouppi. "All they've got to do is convince a very small number of people that they've got something good, and they get a contract for six years. The market is very receptive to them now. There were times when the small suppliers would have given an eye tooth to get at GM parts: now they can get them with ease."

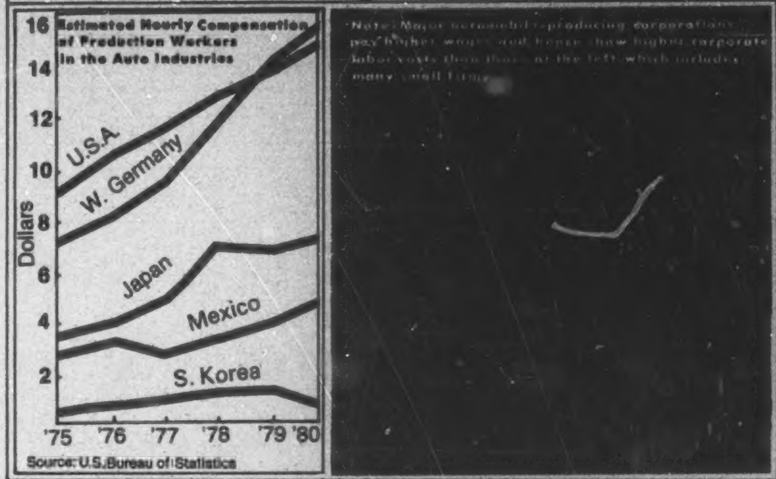
Relations between automakers and suppliers in the past have been marred by adversity over such issues as the manufacturer's decision to integrate or source a parts. Integration occurs when an original equipment manufacturer (OEM) decides to make

Parts Suppliers Foresee More Overseas Sourcing



Source: Arthur Andersen & Co.

Labor Costs Are Driving Automakers Overseas



Source: U.S. Bureau of Statistics

Note: Major automobile-producing corporations pay higher wages and hence show higher corporate labor costs than those at the left, which includes many small firms.

rather than buy a part.

"Borg-Warner developed transmissions for Ford Motor Company a generation ago, and as soon as the volume got high enough, Ford made their own transmissions and said 'good-bye, Borg-Warner,'" explains Mr. Jouppi. "Bendix did a tremendous development job on fuel metering technology and didn't get paid off. And this kind of thing has soured many good suppliers.

"The suppliers and producers had better start talking to each other more. The suppliers who are getting out of automotive are cutting off their noses to spite their face. They are running away from the largest single market on the face of the earth. The primary producers really need the suppliers and don't know how to be suddenly receptive when for a couple of generations they have been shooing them off their doorstep."

"Many of our suppliers feel that we have integrated many times when we should not have," says Lionel Chicoine, vice president of Ford Motor Company's purchasing and supply staff. "There has been a feeling on the part of suppliers, with some legitimacy, that we do take integration actions too quickly, and that we are not considering their contributions in terms of design innovation. Some of our suppliers have suffered significant losses of business because we decided to make something ourself. I understand their concern, and we are now giving far more consideration to the possibility of long-term commitments and nonintegration commitments to our suppliers than we have done in the past. We are placing far more emphasis on cooperation than we have done historically. It's in our mutual interest. It will help our suppliers be more efficient, and it will contribute to quality."

Richard T. Brown, president of Borg-Warner's Mobile Components Group, agrees. Cooperation is necessary "because the OEM doesn't have the capital to spend. He's got to be dependent on the supplier." Mr. Brown predicts fewer suppliers. "OEM's traditionally have thought that their best interests were served by having two or three suppliers compete with one another." But the large investments for today's projects will require longer term relationships between the automaker and a single supplier.

"The supplier attitude has got to change a little bit, too," says Mr. Brown. "Traditionally suppliers have never wanted to share too much information with their customer. Now they might tell him how much money he is making on the product and what his investment is."

The cash-short automakers' dependence on suppliers and growing willingness to make long-term commitments augurs well for suppliers, particularly for the large multinational ones. "The automakers have all told us that their policy would be that if they have a real choice between sourcing and making it themselves, they would rather go outside to avoid the investment," says Ralph White, group vice president, Ex-Cell-O Corp., Troy, Mich.

Thomas J. Busch, Bendix's vice president and group exec, Worldwide Business Strategy and Marketing, explains which components automakers are likely to source: "The high-volume, very high-technology, high-investment-cost components—basically the drive train, engine, transmission, have been retained by the auto companies. The medium-technology, lower volume parts—like brake parts, which we make, and suspension parts and power-steering parts—are sometimes integrated and sometimes supplied by very large companies such as us. The third area of parts are the commodity items—the stamped parts, some suspension parts that are routine, that type of thing. The number of suppliers serving that last category is very very large, and they supply on a local basis."

The economies of scale for the three tiers of components vary. Engines have to be built in the largest lots, brake parts less so, and stampings even less.

For worldwide production, local content laws and import duties are a decisive factor in automakers' sourcing decisions. "Brazil currently prohibits imports of autos and imposes a tariff of up to 250 pct on other motor vehicles," states the DOT report. "Local content requirements in Mexico, Argentina and Korea all currently exceed 60 pct, and in Argentina and Korea range as high as 95 pct for certain vehicles.

"To take advantage of generally lower wage rates, the efficiencies of large scale production and variable tax treatment, and in some cases to satisfy local content requirements, the primary U.S. Automakers and their larger suppliers are under increasing pressure to locate new production facilities abroad, or to buy components from foreign sources."

American automakers are buying abroad an increasing number of the high-cost items cited by Mr. Busch.

American machine tool builders whose overseas operations have been selling to those foreign engine builders now find their products in demand back in the U.S. "Some machinery we've been building in our plants in England and Germany is now coming here," says Hershel A. Miller, Ex-Cell-O's vice president of machine tool marketing. "The machine tool technology we sent to England and Germany twenty years ago is now coming back here as we Americans are using that automotive technology."

The American need for the technology perfected abroad is beginning to attract foreign machine tool builders and suppliers to the U.S.

The standardization of cars will mean "terrific worldwide competition among suppliers based on technical ability," says Ex-Cell-O's Mr. White, "based on who can come up with a

Materials Usage in New Cars, 1975-85

Pounds Dryweight						
Model Year	1975		1980		1985	
Total Weight	3,970		3,080		2,400	
Material Mix	Pct	Lbs	Pct	Lbs	Pct	Lbs
High Strength Steel	2.7	106	5.4	165	12.5	300
Plain Carbon Steel	58.3	2,315	54.2	1,669	44.0	1,056
Iron	15.8	626	14.9	458	9.0	216
Aluminum	2.2	86	4.0	124	6.5	156
Copper	0.9	37	0.8	25	1.0	24
Lead	0.7	29	0.7	22	1.0	24
Zinc	1.3	53	0.6	19	0.5	12
Glass	2.4	94	2.6	80	3.0	72
Rubber	4.0	160	4.0	124	4.5	180
Other Plastics	4.2	168	6.0	184	10.5	252
Other	7.5	297	6.8	212	7.5	180

Source: *The U.S. Automobile Industry, 1980: Report to the President from the Secretary of Transportation.*
Note: Dry weight does not include fuel, oil, water and other liquids.

smaller radiator that will be efficient; who can come up with a plastic fender that will really save half the weight, look like sheet metal, and be paintable. It will probably lead to significant shakeout in suppliers."

"If it makes sense to source outside the automakers," says Maryann N. Keller, the analyst with Wall Street's Paine Webber Mitchell Hutchins, Inc., "it makes no difference whether it's sourced to the United States or Japan. The U.S. parts companies are in competition with the rest of the world and they won't get preferential treatment.

"I see diversification being attempted by every company I know. Diecasters are looking at frames for computers, foundries at construction and agricultural equipment.

"The auto industry is nothing more or less than a cash cow. If the suppliers can't make money on it, they'll take their business elsewhere. There's quite a metamorphosis occurring." Automotive's cyclicality, smaller, more standardized products, and moves to foreign sourcing will all mean less business for American suppliers, she says.

In particular, "suppliers that are narrower in scope and don't have proprietary products could have problems with overseas competition," says Philip K. Fricke, an analyst with Goldman, Sachs & Co., the Wall Street firm.

"There will be a gradual increase in the amount of foreign sourcing," says Ford's Mr. Chicoine, "as business tends to migrate toward the most efficient areas, but at the same time I don't think that the domestic auto parts and machine tool business is so deficient versus foreign competition that there is any risk that they won't be around for a very long time to come. I think some of our auto parts suppliers and machine tool suppliers have already demonstrated in face-to-face competition that they may very well be the most efficient source."

Machine tool orders for Ford's Mexican engine plant, for instance, went to Lamb, LaSalle, and Cross. Favorable financing arrangements induced Cross to build most of the machines in its English plant, some in its West German plant, and about 10 pct here.

"We don't have any particular inhibitions about sourcing to qualified suppliers anywhere in the world," says Mr. Chicoine. "We are in a very dynamic period where everything is in a state of change and the predicting is uncertain at best and right now it's hazardous indeed. Opportunities for complementation, however, are coming to the forefront in certain parts of the world where you will produce engines in one country, transmissions in a second, and vehicles in a third, and sell vehicles in all three countries."

Mr. Busch of Bendix evinces some frustration at the volatile climate in sourcing. Bendix, he says, is prepared to source parts on a long-term basis from whichever of its worldwide plants the automakers prefer, but so far the automakers have given Bendix no clear instructions.

"If the OEMs come to us and say 'Hey, we want the lowest cost product we can get, we don't care where in the world you get it for us, but get it for us,' we can do that through the Bendix system. If they said, 'We want to buy 30 pct of our master cylinders offshore and 70 pct at home, or 50-50, or whatever,' we could say 'Okay, we'll supply you 50 pct from the U.S. and 50 pct from our facility in Japan and have 100 pct capability in the U.S. in case there's a catastrophe on the oceans or something keeps you from getting your supply from Japan. We'll save you the trouble of trying out all the cylinders made around the world, and we'll assure you quality, engineering, and everything else.' That's the philosophy we've been preaching to the automakers, but we're not getting very far with that. I don't know what their philosophy is. They haven't told us, they won't tell us.

"The way they're doing it now is: Today they'll buy from Brazil because the exchange rate is right and the government gives them an incentive. Tomorrow the government changes its policy and they say, 'Forget that, I'll go somewhere else.' So they go to another facility, and all they're doing is running around and causing suppliers to respond to a very short-term contract, and we're saying, 'Hey! Why don't we get together and do it on a longterm basis?'"

Some customers, says Mr. Busch, have asked Bendix to quote prices based on its different international plants, pitting them against one another. Some have even wanted to source Bendix proprietary products from non-Bendix plants. "They want to take our innovation, our technology and do it somewhere else. That's ridiculous! That's what we're in business for."

Automotive sourcing to foreign plants and affiliates of American-based multinationals means the loss of American blue collar jobs but the retention of at least some American profits and employment. American auto companies seem to be making an effort to source overseas through these American multinationals. In some cases, they have encouraged the American suppliers to affiliate with companies in the foreign country of choice. Ford is encouraging such affiliation with Mexico so that it can meet the local content law there.

In these cash-short times, cost is automotive's primary consideration. Chrysler's debts are large, and where Ford and GM will get the cash necessary for their planned retooling is still unclear.

General Motors projects self-confidence about the future and promises to spend $32 billion of its $40 billion capital expenditures within the U.S. "We're fully expecting sourcing of our domestically built vehicles to be domestic," says one spokesman. GM Chairman Roger B. Smith recently predicted that U.S. retail sales of cars and trucks will be nearly

17.5 million units in 1990, way up from the 11.5 sold in depressed 1980; and sales outside the U.S., 32 million units, up from 1980's 23.5.

"Those predictions are wishful thinking," said one auto analyst. "We'll never see the kind of sales we saw in 1973, when nearly 12 million were sold. Who's to say that pent up demand for new cars will ever return? Prices are so high, people could decide to buy used cars instead."

The consensus seems to be that U.S. auto sales will have very low growth during the next decade. The optimists say they will grow at 1½ or 2 pct or even at the rate of the GNP, usually pegged at 2 or 3 pct. The pessimists, such as those polled by Arthur Andersen, predict growth below 1 pct or even flat.

Much depends on fuel prices. The sharp rise in gas prices relative to the general price level following the 1973-4 oil embargo and 1979 Iranian revolution caused a sharp rise in demand for fuel-efficient small cars, a lot of them imports, and a drop in total sales. A growing school of optimists say that the recent rise in energy conservation, oil discovery, and potential alternative sources of energy will prevent further oil shortages. That would increase more auto sales and slow the shrinking size of the average car.

It remains to be seen how much gas prices will deter Americans from buying larger cars, which seems to be their natural inclination to buy larger cars. Automakers certainly prefer the larger cars and the higher profits they bring.

"Ford has decided that there's no way that it can make money building the smallest-size cars in the U.S.," says David Healy, the analyst with Drexel Burnham Lambert. "It's twice scrubbed such plans. It will have to buy those cars from Toyo Koygo instead."

Some analysts have sensed a reluctance by GM to build a subcompact to replace its Chevette. Some say Chrysler is not making a profit on its compact Omni/Horizon line.

One thing is certain: The automakers need to pinch pennies anyway they can. "If Ford continues to spend at the same rate it's spending at now," says Mr. Healy, "it'll be out of cash by the end of the year." Will increased foreign sourcing help it?

Ford's overseas operations already are extensive; 45 pct of its total vehicle sales in 1980 were outside North America. It claims a 94 pct North American local content for its current North American products, but that is sure to come down. With unusual regularity Detroit's big guns, Ford's Chairman Philip Caldwell and President Donald E. Petersen and GM's Chairman Roger B. Smith and F. James McDonald, have been firing away at the UAW labor rates, topped worldwide only by the West German autoworkers'. "It is essential that labor understand that the domestic industry must improve its quality and cost competitiveness or go offshore—or down the drain!" said Mr. McDonald, summing up the speeches of all four.

UAW President Douglas A. Fraser has defied such threats and is trying to strengthen the solidarity of the autoworkers of the world. The International Metalworkers Federation-UAW GM World Auto Council, an assembly of union leaders at GM plants, met last month in Dearborn, Mich.; represented were more than half of the 33 countries where GM has plants. Mr. Fraser told the assembly that they should support one another's wage demands to stop auto companies from moving to countries with lower labor rates. "If you have an international auto company, you must have international labor," said Mr. Fraser. "GM has no loyalty to any flag or country. GM has loyalty only to profit."

The American autoworker's wage is about three times a Mexican's, fifteen times a South Korean's. That looks very good to cash-short American automakers wanting to stay profitable. Also to American suppliers, some of whom pay UAW rates, and machine tool builders. "Like the auto companies, the supplier has to find sourcing at the lowest possible cost," says Ms. Keller.

"If automotive production leaves the U.S., the machine tool industry will have to follow them," says Ralph E. Cross, Jr., president of the Cross Company. Local content laws will require the companies to build plants abroad.

"The political influence on business is immense," says Mr. Cross. "It controls imports, exports, local content laws, exchange rates, subsidies, financing. It puts a lot of risk in overseas business."

Long-term uncertainties about labor force productivity and market add more risk, says Mr. Cross. The Cross Company is building machines for Ford Mexico, but it has no plans to build a plant in Mexico, he says. "It takes five years to get a plant really as productive as you want when you have to train the labor force from scratch. If we built a plant in Mexico, we would get orders for political rather than commercial reasons during its developing years.

"Sourcing overseas obviously has some benefits," says Richard Cottrell, vice president of the Bendix Industrial Group, "but you can't run away from the problem. Unless we create some jobs in this country I don't know who's going to be here to buy what they are going to source overseas.

"The U.S. has lost some of its courage to challenge the foreign markets. They should go and sell in those foreign markets rather than being so anxious to go over and hire that cheap labor. I also think they have lost the courage to make a sincere attempt to become partners with labor."

Business with farm, construction, and industrial equipment and aerospace companies will cushion the Bendix industrial group against the volatile automotive market. "We've got to reduce our dependence on automotive," says Mr. Cottrell.

Still, Ex-Cell-O's Mr. Miller reflects the whole machine tool industry's optimism when he says, "Automotive will never stop buying machinery." Once the present automotive spending program is completed, says Mr. Cottrell, "you'll hit a flat spot and then technology, replacement, and product change will drive demand back up."

Automotive's transformation of the American car involves downsizing, conversion to front wheel drive, and material substitution. The changes have reverberated throughout industry.

"Downsizing has improved our business tremendously," says Clifford R. Meyer, Cincinnati Milacron's executive vice president-operations. "All the drive trains, transmissions, and engines had to be changed."

The growth in plastic and decline in steel use hasn't hurt Cincinnati, either. "We walk both sides of the street. The manufacture of plastic machinery and machine tools is really the same kind of animal. We can shift products from one plant to the other.

"So anything we may lose in metalcutting, we will pick up in plastic processing."

The components business of Bendix and Borg-Warner on the other hand, have been hurt by downsizing. □

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METALWORKING PRICE TRENDS

Down and down goes the price thermometer

Lately, inflation has been cooling so rapidly that some economists are saying flat-out that it is licked.

But high rates of inflation have been around for so long that it is hard to imagine them disappearing from the economic scene. At least, it is hard to imagine them leaving the scene so quickly, so quietly and . . . for good.

Still, the price rise fever has been cooling, and for several months now. And this cooling has been as apparent in metalworking lines as well for the entire economy. A good case in point is seen in producer prices of capital equipment. In October of last year, these prices on a month-to-month basis rose by 1.7 pct. In January of this year, the price advance came to 1.2 pct. And last month, tags on capital equipment moved up by only .7 pct.

The price rise slowdown in metalworking has not been an even braking action. There have been upward wiggles here and there. But at least over the past six months or so there has been no question about the direction of the inflation rate for metalworking product lines. It has been clearly down.

In June, about the only key metalworking product line that didn't seem to 'get the message' about cooling prices was heavy trucks. As noted on the table here, those truck prices rose some 2.6 pct in June. That's an annual rate of more than 30 pct.

Why trucks? It's a good question, and the answer is not found in economic logic.

The market for heavy trucks hasn't been that good. But, of course, costs of making trucks have gone up. Still, those costs have hardly gone up any faster than those for most products listed on the table. It has to be assumed then that truck prices are being set by producers to best achieve some profitability target—a case where diminished volume and higher prices work out to the best advantage of manufacturers.

The average year-to-year percentage price change for the 23 metalworking product lines listed on the table here came out to 10.1 pct in June. That is about the same as in the preceding two months. But it is well below the 11.4 pct average for the three months ending in February. That month seems to mark the start of the inflation-cooling process.

Latest Month Covered: May, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	343.5	+ .5	+ 9.0
Metal Forming Machine Tools	378.0	+ .4	+ 9.0
Agricultural Machinery & Equip.	285.9	+ .5	+11.2
Construction Machinery & Equip.	320.0	+ .5	+11.3
Special Industry Mach. & Equip.	309.1	+ .6	+12.7
Industrial Process Furnace & Ovens	331.1	+ .2	+12.9
Industrial Material Handling Equip.	276.9	NC	+ 9.1
Pumps, Compressors & Allied Equip.	322.6	+ .9	+12.8
Fluid Power Equip.	22[illegible].6	+ .5	+10.4
Mechanical Power Transmission Equip.	292.9	+ .6	+11.8
Automobiles	205.3	+ .4	+ 9.8
Motor Trucks—Light	248.6	NC	+17.5
Motor Trucks—Heavy	283.0	+ 2.6	+14.7
Railroad Equipment	337.4	+ .1	+ 8.1
Fabricated Metal Structural Products	295.4	+ .4	+ 9.4
Electric Motors	271.2	+ .5	+ 9.1
Valves & Fittings	306.9	+ .2	+ 6.0
Ball & Roller Bearings	294.3	+ .3	+ 9.0
Cutting Tools Accessories	257.5	+ .4	+ 9.0
Heating Equipment	222.9	+ .5	+ 8.7
Plumbing Fixtures & Brass Fittings	268.2	+ 1.0	+ 7.9
Metal Containers	314.1	NC	+ 3.8
Miscellaneous Metal Products	27[illegible].4	– .1	+ 8.0

Data based on U.S. Labor Dept.'s Producer Price Index

EFFECTIVE JULY 6, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	270	268	271	238
Buffalo	74	74	68	59
Pittsburgh	378	389	442	299
Youngstown	113	135	131	94
Cleveland	189	180	170	120
Detroit	167	173	159	102
Chicago	573	595	641	418
Cincinnati	110	107	113	91
St. Louis	91	91	89	64
Southern	249	250	259	252
Western	165	157	147	126
U.S. Production	2,379	2,419	2,490	1,863

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $28.50

*80.50—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

Steel Production, Composite Prices

(Effective July 6, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,379	2,419	66,771	59,994
Capability Utilization Rate	80.4	80.8	84.4	76.3

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	23.776	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 90.17	$ 90.17	$ 89.17	$ 69.83
No. 2 bundles	$ 61.17	$ 61.17	$ 62.17	$ 52.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$102.50	$99.50	$ 69.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	77.50
No. 1 steel, Chicago	88.50	88.50	88.50	62.50
No. 1 bundles, Detroit	91.50	91.50	91.50	60.50
Low Phos., Youngstown	96.50	96.50	99.50	75.50
No. 1 mach'y cast., Pgh	94.50	94.50	99.50	85.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	115.50
No. 1 mach'y cast., Chi.	124.50	124.50	122.50	110.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective July 6, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	80.45-83.00	80.50-83.00	7/ 6/81
Lead	39.00	38.00-39.00	6/26/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredc, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$403.75
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$425-$440
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$700.00
Silver ingots, per troy oz.	$9.30
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

June 29—566.50
June 30—564.02
July 1—561.27
July 2—565.00
July 3—562.22

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	68
No. 2 copper wire	59
Light copper	50
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum		
New mixed clips	36	—37
Old sheet	32	—33
Old cast	32	—33
Clean dry borings	33	—34

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	64	—65
No. 2 copper wire	53	—54
Light copper	51	—52
Radiators	42	—43
No. 1 composition	57	—58
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	50	—51
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

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EFFECTIVE JULY 6, 1981

MATERIALS NEWSFRONT

(Effective July 6, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to	$103.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	116.00 to	117.00
No. 1 factory bundles (auto)	119.00 to	120.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	116.00 to	117.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	120.00 to	121.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	111.00 to	112.00
Rails, 2 ft. and under	120.00 to	121.00
Scrap rails, random lgth.	103.00 to	104.00
RR specialties	117.00 to	118.00
No. 1 machinery cast	94.00 to	95.00
Cupola cast	87.00 to	88.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	690.00 to	700.00
18-8 turnings	590.00 to	600.00

Chicago

No. 1 hvy. melting	$ 88.00 to	$ 89.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles (auto)	107.00 to	108.00
No. 2 dealer bundles	64.00 to	65.00
Unburned bundles	59.00 to	60.00
No. 1 busheling	92.00 to	93.00
Shredder scrap	89.00 to	90.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	68.00 to	69.00
Low phos. forge crop	114.00 to	115.00
Low. phos. punchings plate ¼ in. and heavier	124.00 to	125.00
Low phos. 2 ft. and under	117.00 to	118.00
No.1 RR hvy. melting	92.00 to	93.00
Scrap rails, random lgth.	89.00 to	90.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	119.00 to	120.00
RR couplers and knuckles	115.00 to	116.00
RR car axles	169.00 to	170.00
No. 1 machinery cast	124.00 to	125.00
Cupola cast	104.00 to	105.00
Stove plate	99.00 to	100.00
Steel car wheels	108.00 to	109.00
Stainless		
18-8 bundles and solids	665.00 to	675.00
18-8 turnings	540.00 to	550.00
430 bundles and solids	155.00 to	165.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to	$ 81.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	106.00 to	109.00
No. 2 dealer bundles	53.00 to	56.00
No. 1 busheling	102.00 to	105.00
Shredder scrap	85.00 to	88.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	54.00 to	57.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	98.00 to	101.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	115.00 to	118.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	118.00 to	121.00
Cupola cast	78.00 to	81.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to	$ 72.00
No. 2 hvy. melting	69.00 to	70.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	46.00 to	47.00
No. 1 busheling	91.00 to	92.00
Drop forge flashings	69.00 to	70.00
Machine shop turn.	34.00 to	35.00
Mixed borings and turn.	30.00 to	31.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	39.00 to	40.00
Heavy breakable cast	61.00 to	62.00
Mixed cupola cast	79.00 to	80.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	640.00 to	650.00
18-8 turnings	490.00 to	500.00
430 bundles and solids	135.00 to	145.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 dealer bundles	58.00 to	59.00
Machine shop turnings	19.00 to	20.00
Shoveling turnings	36.00 to	37.00
Low phos. plate	96.00 to	97.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	83.00 to	84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	56.00 to	57.00
No. 1 dealer bundles	100.00 to	101.00
No. 1 factory bundles	106.00 to	107.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	96.00 to	97.00
Machine shop turn.	25.00 to	26.00
Mixed bor. and turn.	25.00 to	26.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	25.00 to	26.00
Cut structural & plates, 2 ft. and under	120.00 to	121.00
Low phos. punchings plate	120.00 to	121.00
Drop forge flashings	61.00 to	62.00
Foundry steel, 2 ft. & under	91.00 to	92.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	127.00 to	128.00
Rails, 18 in. and under	128.00 to	129.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	90.00 to	91.00
Structural and plate, 2 ft. and under	98.00 to	99.00
Rails, 2 ft. and under	76.00 to	77.00
Scrap rails, random lgth.	56.00 to	57.00
No. 1 machinery cast	96.00 to	97.00
No. 1 cupola cast	64.00 to	65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stope plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 90.00 to	$ 91.00
No. 2 heavy melting	81.00 to	82.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	91.00 to	92.00
Elec. furnace, 3 ft. & under	81.00 to	82.00
Structural and plate, 2 ft.	109.00 to	110.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	91.00 to	92.00
Scrap rails, random lgth.	88.00 to	89.00
Rails, 18 in. and under	111.00 to	112.00
Angles and splice bars	99.00 to	100.00
No. 1 cupola cast	98.00 to	99.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to	$ 70.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	80.00 to	81.00
No. 2 bundles	43.00 to	44.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	22.00 to	23.00
Cast iron borings	22.00 to	23.00
Low phos. 18 in. and under	100.00 to	101.00
Rails, random length	80.00 to	81.00
Rails, 2 ft. and under	103.00 to	104.00
No. 1 cupola cast	74.00 to	75.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	99.00 to	100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	650.00 to	670.00
18-8 turnings	550.00 to	570.00
430 prepared solids	120.00 to	140.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to	$ 62.00
No. 2 hvy. melting	53.00 to	55.00
No. 1 dealer bundles	72.00 to	74.00
No. 2 bundles	31.00 to	33.00
No. 1 busheling	72.00 to	74.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	130.00 to	135.00
Mixed cupola cast	56.00 to	58.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 53.00 to	$ 55.00
No. 2 hvy. melting	45.00 to	47.00
No. 1 dealer bundles	40.00 to	42.00
No. 2 dealer bundles	25.00 to	27.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 51.00 to	$ 53.00
No. 2 hvy. melting	41.00 to	43.00
No. 1 dealer bundles	38.00 to	40.00
No. 2 dealer bundles	21.00 to	23.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to	116.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	66.00 to	68.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	88.00
No. 2 bundles	57.00 to	58.00
Machine shop turn.	17.00 to	19.00
Crushed turnings	40.00 to	42.00
Shredder scrap	96.00 to	97.00
Cut structural plate 2 ft. and under	114.00 to	115.00
Unstripped motor blocks	79.00 to	81.00
Cupola cast	95.00 to	97.00

EFFECTIVE JULY 13, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	265	270	255	237
Buffalo	70	74	67	45
Pittsburgh	383	378	444	303
Youngstown	113	113	134	86
Cleveland	160	189	181	109
Detroit	166	167	175	91
Chicago	550	573	637	416
Cincinnati	94	110	104	86
St. Louis	76	91	95	80
Southern	247	249	245	246
Western	152	165	150	131
U.S. Production	2,276	2,379	2,487	1,830

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective July 13, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,276	2,379	69,177	61,517
Capability Utilization Rate	77.0	80.4	84.3	75.5

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 90.17	$ 90.17	$ 89.17	$ 69.83
No. 2 bundles	$ 61.17	$ 61.17	$ 62.17	$ 49.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$102.50	$99.50	$ 69.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	77.50
No. 1 steel, Chicago	88.50	88.50	88.50	62.50
No. 1 bundles, Detroit	91.50	91.50	91.50	60.50
Low Phos., Youngstown	96.50	96.50	96.50	70.50
No. 1 mach'y cast., Pgh	94.50	94.50	99.50	85.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	115.50
No. 1 mach'y cast., Chi	124.50	124.50	124.50	110.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective July 13, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.00-83.35	83.00-83.45	7/13/81
Lead	41.00-42.00	39.00-41.00	7/10/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$413.00
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$425-$435
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.10
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

July 6—561.91
July 7—563.84
July 8—566.57
July 9—566.74
July 10—570.37

Scrap Prices

Brass Mill Scrap

(cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	65
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	69
No 2 copper wire	61
Light copper	50
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum		
New mixed clips	35	—36
Old sheet	32	—33
Old cast	32	—33
Clean dry borings	33	—34

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	38	—39
Mixed L.C. clips	30	—31
Old sheets and cast	23	—24
Boring and turnings	20	—21
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	63	—64
No. 2 copper wire	52	—53
Light copper	50	—51
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

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EFFECTIVE JULY 13, 1981

MATERIALS NEWSFRONT

(Effective July 13, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	86.00 to 87.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	116.00 to 117.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	120.00 to 121.00
Heavy turnings	86.00 to 87.00
No. 1 RR hvy. melting	111.00 to 112.00
Rails, 2 ft. and under	120.00 to 121.00
Scrap rails, random lgth.	103.00 to 104.00
RR specialties	117.00 to 118.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	680.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles (auto)	107.00 to 108.00
No. 2 dealer bundles	64.00 to 65.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	94.00 to 95.00
Shredder scrap	92.00 to 93.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	114.00 to 115.00
Low. phos. punchings plate ¼ in. and heavier	126.00 to 127.00
Low phos. 2 ft. and under	119.00 to 120.00
No.1 RR hvy. melting	95.00 to 96.00
Scrap rails, random lgth.	92.00 to 93.00
Reroller rails	122.00 to 123.00
Rails, 2 ft. and under	123.00 to 124.00
RR couplers and knuckles	117.00 to 118.00
RR car axles	172.00 to 173.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	104.00 to 105.00
Stove plate	99.00 to 100.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	665.00 to 675.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	107.00 to 110.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	103.00 to 106.00
Shredder scrap	85.00 to 88.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	98.00 to 101.00
Low phos. 2 ft. punchings	117.00 to 120.00
Electric furnace bundles	115.00 to 118.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	118.00 to 121.00
Cupola cast	78.00 to 81.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to $ 72.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	90.00 to 91.00
Drop forge flashings	69.00 to 70.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 36.00
Cast iron borings	39.00 to 40.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 106.00
Stainless	
18-8 bundles and solids	640.00 to 660.00
18-8 turnings	490.00 to 500.00
430 bundles and solids	136.00 to 146.00

Youngstown

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 dealer bundles	58.00 to 59.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	96.00 to 97.00
Electric furnace bundles	96.00 to 97.00
Galvanized bundles	83.00 to 84.00

Cleveland

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	56.00 to 57.00
No. 1 dealer bundles	100.00 to 101.00
No. 1 factory bundles	106.00 to 107.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	120.00 to 121.00
Low phos. punchings plate	120.00 to 121.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	91.00 to 92.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	129.00 to 130.00
Rails, 18 in. and under	130.00 to 131.00
Steel axle turnings	71.00 to 72.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No. 1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	81.00 to 82.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	91.00 to 92.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	81.00 to 82.00
Structural and plate, 2 ft.	109.00 to 110.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	90.00 to 91.00
Rails, 18 in. and under	114.00 to 115.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	80.00 to 81.00
No. 2 bundles	43.00 to 44.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Low phos. 18 in. and under	100.00 to 101.00
Rails, random length	80.00 to 81.00
Rails, 2 ft. and under	103.00 to 104.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	660.00 to 670.00
18-8 turnings	560.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 62.00 to $ 64.00
No. 2 hvy. melting	54.00 to 56.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 bundles	33.00 to 36.00
No. 1 busheling	74.00 to 76.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	130.00 to 135.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	38.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	78.00 to 80.00
No. 2 bundles	65.00 to 67.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	53.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	95.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	[illegible]

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	86.00 to 88.00
No. 2 bundles	57.00 to 58.00
Machine shop turn.	17.00 to 19.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	79.00 to 81.00
Cupola cast	95.00 to 97.00

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IRON AGE

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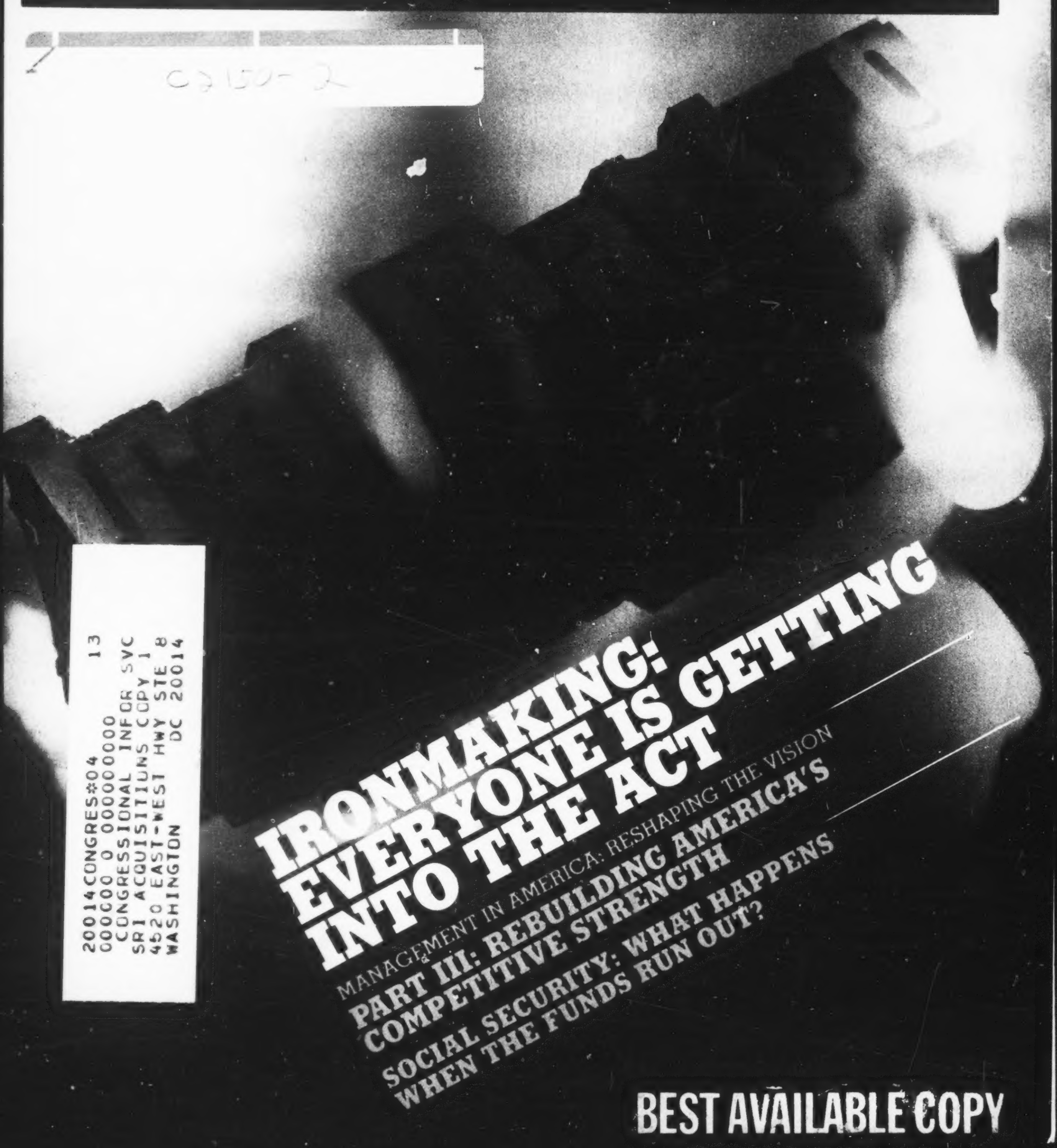

IRONMAKING: EVERYONE IS GETTING INTO THE ACT

MANAGEMENT IN AMERICA: RESHAPING THE VISION

PART III: REBUILDING AMERICA'S COMPETITIVE STRENGTH

SOCIAL SECURITY: WHAT HAPPENS WHEN THE FUNDS RUN OUT?

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IRON AGE

VOL. 224, NO. 22

AUGUST 3, 1981

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Solving the engineering problems of tomorrow's aircraft

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $80 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING NEWSFRONT

Steel returns economist's blast with one of its own

The steel industry has reacted strongly to an economist's study which alleges, among other things, that the industry is doomed to a continuing decline.

The study, made by Robert Crandall, was released by the Brookings Institution. However, the think tank issued a disclaimer asserting the views are those of the author and not of the Institution. At a press briefing, Mr. Crandall said the industry will "decline marginally. I don't see it collapsing overnight."

However, the American Iron and Steel Institute (AISI) reacted vigorously, asserting, for one thing, "the data base used by Mr. Crandall and his analysis (is) inadequate and flawed." AISI says "the book virtually ignores the role of foreign government policies in promoting the growth of their steel industries and the consequent growth of import penetration in the U.S. market. It ignores the substantial impact on world steel trade of foreign government ownership or subsidization of the major share of world steel production."

In the study, Mr. Crandall acknowledges the influence of foreign steel production but only to point out that it is low-cost producers in developing countries that are exerting pressure on the domestic industry for what he calls "sound economic reasons."

However, AISI, reacting to a draft manuscript of Mr. Crandall's study, says his comparison of U.S. and foreign costs of production is highly misleading. "Cost data for new U.S. greenfield mills are greatly overstated for labor, energy and capital," AISI says. "Third World construction and operating costs are greatly understated."

Basically, Mr. Crandall concludes the industry will remain stagnant during the 1980s while low-cost producers in developing countries increase their share of world steel markets. "Efforts to revive the industry by offering it greater protection against foreign competition will fail," he says, "because proximity to low-cost coal and iron ore is no longer a sufficient advantage to offset the high costs of American labor."

"All the trigger price mechanism (TPM) does," Mr. Crandall told reporters, "is slow down the rate of the industry's decline, decline is inevitable." He refused to speculate how long the TPM would have to remain in effect saying it is now pegged to exchange rates. "Exchange rates' movement will decide the movement of the TPM," he said.

AISI charged Mr. Crandall's study rejects the need for policies of the U.S. government to deter unfairly priced imports. "The absence of such policies," the Institute said, "could lead to unfettered price discrimination by foreign producers, stimulating exports and reducing U.S. employment through unfair trade practices."

Mr. Crandall is a former deputy director of the Council on Wage and Price Stability and one of the contributors to the 1977 Solomon Plan, named after former Treasury Secretary William Solomon, aimed at helping the steel industry.

By Edwin W. Bowers

Brock says trade laws on steel will be enforced

U.S. Special Trade Representative William Brock has assured the Congressional Steel Caucus the trade laws governing imports of foreign steel will be adequately enforced.

At an Executive Committee meeting of the Caucus Rep. Adam Benjamin (D., Ind.) warned Amb. Brock that steel "cannot be a trade-off to accommodate President Reagan's foreign policy."

Mr. Brock assured the Caucus the Administration fully realizes the vital importance of the domestic steel industry and its importance to national security. He promised to work vigorously on behalf of American steel interests, particularly talking with Europeans and Canadians about the prospects of a flood of low priced exports to the U.S. □

Steel gets break on clean air regulations

As President Reagan put his signature to legislation allowing the steel industry up to three additional years to meet air pollution laws, the industry was preparing to release a massive study of its chances to comply.

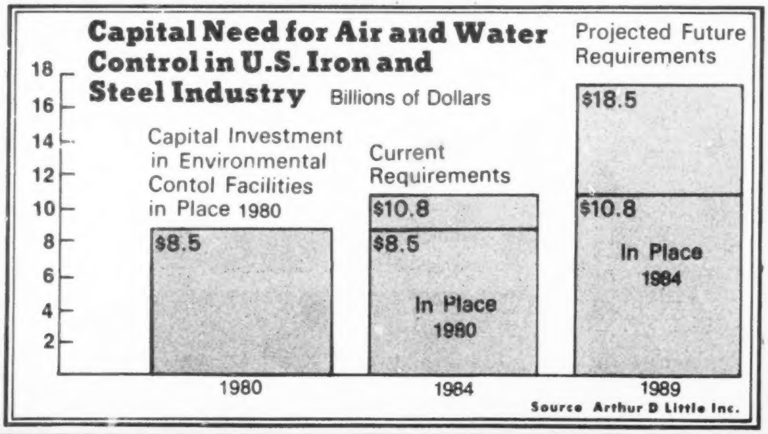
Having accomplished what it already has in keeping clean the air surrounding its mills, the industry faces the potential additional burden of $10 billion to meet environmental requirements in the 1980s, according to the study done by Arthur D. Little Inc.

Thus far the industry has in place $8.5 billion in environmental equipment to meet air and water quality requirements. The study estimates that the industry in the next four years will spend at least another $2.3 billion to comply with the current air and water environmental requirements. Assuming those estimates, the industry, by 1984, will have spent an estimated $10.8 billion to comply with air and water environmental requirements.

"Over the past 10 years," the study concludes, "the steel industry has expended a large effort to overcome its air and water pollution problems. Progress, as measured on the plant operation level, shows tremendous advancement in efficiency of clean-up.

The steel industry has made great progress toward making its current and already planned installations meet public health related standards. Projected future requirements to comply with secondary or welfare standards do not appear to be cost-effective for the potential benefits that they could provide."

(Cont. on p. 17)


Capital Need for Air and Water Control in U.S. Iron and Steel Industry

Source Arthur D Little Inc.

METALWORKING NEWSFRONT

The report shows that by the end of 1982 (1985 for those companies taking advantage of the new legislation signed by President Reagan) the steel industry will be able to clean up 96 pct of its criteria air pollutants. The Little group says the steel industry is increasingly burdened by literally thousands of governmental regulations which are having a disastrous cumulative effect. Among those are excessive environmental regulations, it says.

"Rather than imposing additional costs with unacceptable economic consequences, the U.S. government should revise its policies to ensure acceptable environmental quality within a sound American economy." Unless dramatic changes are made, the study says, the industry, in order to comply with projected future requirements, by 1989 might have to incur capital costs estimated to be $7.7 billion over and above the $10.8 billion it will have incurred by 1984.

Tax bill continues to stir heated debate

Treasury Secretary Donald Regan insists the Administration's tax cut program will mean 11 million new jobs and says the Democrats are being ridiculous when they say their tax program is "the poor man's bill."

Speaker of the House of Representatives, Thomas O'Neill (D., Mass.), believes the Democrats are aiming their tax cuts at the middle class. He accused the Administration of already cutting benefits for 3 million social security recipients.

Mr. Regan predicted President Reagan's 25 pct, 33-month tax cut would be passed by Congress.

"We are looking for about 11 million jobs" to be produced by the Republican tax plan, as small business entrepreneurs again become willing to take risks that will boost employment, Mr. Regan said.

The Treasury Secretary scoffed at the Democrats' alternative, maintaining it is a bill to redistribute wealth, not create it. He accused the Democrats of "trying to buy their way to victory over us" with tax breaks for special interest groups.

"As far as their's being a type of bill that's slanted toward the low end of the scale . . . the poor man's bill," Mr. Regan said, "Napoleon made a remark after his return from Moscow to the effect that it's only a step from the sublime to the ridiculous, and look at the steps the Democrats have taken.

Joint Budget Committee meeting has drawn lively comment from both Democrats and Republicans. Here, Senate Budget Committee Chairman, Pete Domenici, (R.-N.M.) addresses the group on Capitol Hill. Also pictured are House Budget Committee Chairman James Jones, (D.-Okla.) and Sen. Ernest Hollings, (D.-S.C.).

"What they did, in an effort to prove they have a poor man's bill, they went out and gave 2,500 wealthy speculators on the floors of the Chicago Board of Trade and other commodity exchanges a tax break of $400 million."

In a statement, Rep. O'Neill said, "We would be remiss if we did not straighten the record on Secretary Regan's comments.

"The Democratic tax plan would give larger cuts to families making $10,000 to $50,000 a year. Secretary Regan may consider that a 'poor man's tax cut.' We Democrats know it's a better deal for the middle class."

Rep. James Jones (D., Okla.), Chairman of the House Budget Committee, charges there has been "no good faith attempt on the behalf of the Administration to negotiate a tax bill.

"There are a lot of people in Congress who feel, given the negotiations that went on in the tax bill, that again the Administration wants a clear-cut political victory and ... the economic foundation or justification for the tax bill has been abandoned a long time ago," Rep. Jones said.

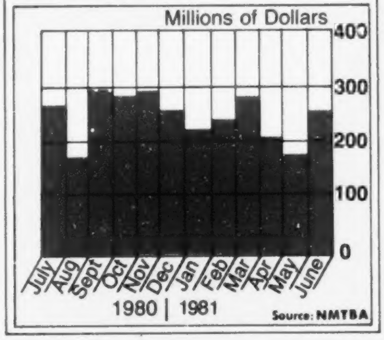
Hefty boost in June machine tool orders

"Although the increase in orders during June is encouraging, both the machine tool industry and the economy are far from full recovery." So said James A. Gray, president of the National Machine Tool Builders' Assn. (NMTBA), as he released the June statistics.

Machine tool orders jumped 35 pct in June over May to a level of $307.2 million. This was the first positive movement in three months. But despite this flurry of activity in June, cumulative orders for the first half of 1981 are still down by 38 pct as compared to the same period of last year.

Shipments of machine tools continued to be strong in June, reaching a total of $511.2 million for the month. It's a jump of 24 pct over the May shipment figures, and the largest monthly volume of shipments so far in 1981. As for shipments in the first half of the year, they're 14 pct ahead of those for the same six months of 1980.

Machine Tools-Cutting, New Orders



Source: NMTBA

"These new orders may reflect some optimism among parts of industry that the Congress is nearing agreement on a consistent, long-term business policy for the future," says Mr. Gray. "But it will take more than one month's statistics to learn whether this is a viable trend or merely delayed orders that could be deferred no longer."

Mr. Gray points out that the more significant figure is the continued high rate of machine tool shipments. "This," he says, "reflects the massive

(Cont. on p. 19)

capital investment that the machine tool industry has made over the past several years to expand capacity and improve its own productivity.

"This capital expansion among machine tool builders can be seen in the decreased time span between the ordering of a machine tool and its shipment. The average delivery time today is 10 months compared to over 14 months a year ago."

The June figures reflect an increase in machine tool orders in both the metal-cutting and metal-forming sectors. The metal-cutting tool ordered in June reached more than $251.8 million. This was an increase of 41 pct over May but a drop of 39 pct from the figure of June 1980.

Orders for metal-forming tools were more than $55.3 million in June—a boost of 13 pct over May and an even higher boost of 29 pct over the June 1980 level.

Both machine tool sectors showed increases in shipments for June—$415.25 million or a 25 pct increase over May for metal-cutting tools, and $95.95 million or a hike of 21 pct over May for metal-forming tools.

On a quarterly basis, the second quarter of 1981 registered total orders of $840.15 million, 7 pct lower than the first quarter and the lowest quarter since 1977.

AMC turns to France for parts for its front-wheel-drive Renaults

American Motors will buy from Renault and Renault suppliers 25 pct of the parts for the front-wheel-drive (FWD) Renault cars it will build next year in its Kenosha, Wis., plant. That's for the short term. Long term, American Motors will buy wherever in the world sourcing is most economical.

Time constraints caused the high volume of French sourcing for the Renault cars. American Motors is the only major domestic carmaker without a FWD product.

It wants to enter that competition with the fuel-efficient, four- and two-door Renault cars as soon as possible. So, to save time, AMC is buying from Renault's suppliers the highly functional parts that require a long lead time for tooling, testing, and debugging: the engine, powertrain, and parts related to braking and acceleration.

"Our intention for the long term," says A. Keith Ebersole, AMC's vice president—Diversified Operations and Supply Group, "is to buy only the engine and gear box from France. Our basic intention is to buy the products for our new Renault vehicles here in the U.S."—if the American supply base can deliver "import quality" at competitive prices.

American Motors typically makes 3 pct of the U.S. automakers' sales, compared to GM's 60 pct. AMC buys almost 70 pct of its parts, while GM buys a little more than 50 pct. The company's small size gives it flexibility but also greater dependence on the supply base.

"Our ties with our suppliers are much stronger out of necessity," says Mr. Ebersole. "We have a closer working relationship and a longer term relationship with the supply base than the other OEM's, because they can be more autonomous."

American Motors currently is buying 10 pct of its parts from foreign sources. "We're looking all over the world," says Mr. Ebersole. Besides France, Mexico and Canada are the top foreign sources.

"The real market opportunities are no longer in this country," says Jack A. Bechtel, AMC's director—procurement. "In Mexico you have twenty people for every car; in the U.S., two for every car. You have a growth rate running at 7 to 8 pct overall in Mexico, compared to our flat line.

"We just sent down there a team that visited 45 different supply operations. We currently are inquiring into doing about $30 million worth of business in Mexico."

American Motors is shipping to its U.S. plants transmissions, leaf springs, coil springs, hoses, and steering wheels from Mexico and used to source glass from there. It has in Mexico an assembly plant and a minority interest in an automaker, whose sales capture 10-14 pct of the Mexican market.

"Our AMC piece of the business in Mexico is increasing so drastically," says Mr. Ebersole, "that many of the suppliers there can't keep up. Therefore we are shipping to them." In order to meet the local content laws of Mexico, AMC has a "very aggressive program" to find Mexican suppliers.

Mr. Ebersole emphasizes that American Motors prefers to buy American and avoid the packaging, transport, and duty costs of imports. "If we can get first-rate pricing and quality here," he says, "we will buy it here. But if our American supply base does not remain competitive, we will go elsewhere."

By Bryan H. Berry

Borg-Warner—Mitsubishi hook up in plastic project

Borg-Warner has announced its eighth joint venture with a Japanese firm. Borg-Warner Chemicals Inc. will manufacture a completely new family of engineering plastics with Mitsubishi Gas Chemical Company, a subsidiary of Japan's mighty Mitsubishi Heavy Industries.

The equal partners will build one plant in Japan and one in the U.S. "Mitsubishi has the most cost-effective way of manufacturing this line of thermoplastics," says Dave Siler, Borg-Warner Chemicals' automotive marketing manager. That explains why the Japanese plant will be built first; it will be completed next year at a cost of more than $10 million and have an annual capacity of about 20 million pounds of product. Borg-Warner estimates that the U.S. market for the new thermoplastic will be large enough to support a domestic plant two to four years after the Japanese plant begins production. That means the American plant will open sometime between 1984 and 1986.

Borg-Warner will sell the thermoplastics in the U.S. and Canada, Mitsubishi in the Far East. Once both the American and Japanese plants are built, they will supply each other with excess capacity. "We'll ratchet the output of both companies up at a rate that's acceptable to both," says David L. McEwan, Borg-Warner's director of marketing.

The new thermoplastic is called polyphenylene ether resin (PPE), and it's combined with polystyrene, most commonly in 50/50 mixes, and injected into a mold to form automotive parts, for example. Compared with ABS, a leading automotive thermoplastic, the PPE is more difficult to process but has more impact strength and less tendency to distort in heat. It can withstand temperatures up to 250 degrees F without distorting.

Mr. Siler estimates the PPE will cost about 20 pct more than the Cycolac ABS Borg-Warner now sells to automakers. Mr. McEwan estimates that Borg-Warner accounts for about 40 pct of the present ABS market; Monsanto, 30 pct; Dow Chemical and U. S. Steel combined, 25 pct; and Mobay, 5 pct.

LOOK WHO'S BEING CUT OUT OF TOP JOBS IN THE U.S.

Recent court decisions have split on the issue of laws which exclude Americans from top-level positions at foreign companies located here.

By Susan T. Parker

Is a Japanese company that operates a facility in the United States in violation of federal civil rights laws if it excludes Americans from top-level management and technical positions? Yes and no, according to two recent court decisions.

In April, the 5th U.S. Circuit Court of Appeals in New Orleans ruled that C. Itoh & Co. (America) Inc., a wholly-owned subsidiary of a Japanese trading company, could limit management and technical personnel to Japanese nationals only. In doing so, the court said that C. Itoh would not be violating Title VII of the 1964 Civil Rights Act, which makes it illegal for U.S. firms to hire solely on the basis of race, color, religion, sex or national origin.

The 5th Circuit based its decision on the Treaty of Friendship, Commerce and Navigation that the U.S. negotiated with Japan almost 30 years ago. The 1953 commercial treaty, in effect, permits companies of either nation, when operating in the other's territory, to hire the management and technical personnel of their choice. The court in its decision specifically referred to Article VIII (para. one) of the treaty, which allows both Japan and the U.S. to hire "accountants and other technical experts, executive personnel, attorneys and other specialists *of their choice*" while in the other's territory.

"We hold that article VIII (para. one) of the treaty does exempt C. Itoh-America from domestic employment discrimination laws to the extent of permitting discrimination in favor of Japanese citizens in employment for executive and technical positions," the court said in its ruling. Put more bluntly, the 5th Circuit concluded that Article VIII (para. one) of the treaty permits a United States subsidiary of a Japanese enterprise "to hire only Japanese personnel for executive and technical positions."

The 5th Circuit's decision reversed an earlier ruling by a Houston district court. The district court held that C. Itoh-America, New York, could not discriminate against U.S. workers, because it was actually an American company even though it was owned by Tokyo-based C. Itoh Ltd.

The Houston court based its decision on Article XXII (para. 3) of the U.S.-Japan treaty. It specifically states that "companies constituted under the applicable laws and regulations within the territories of either (country) *shall be deemed companies thereof* and shall have their juridicial status recognized within the territories of the other (country)."

The Houston district court interpreted the treaty article to mean that "the nationality of the corporation is determined by the place of incorporation." Since C. Itoh-America is incorporated in New York, the court concluded that the company is American and therefore it is not immune to the equal employment opportunity laws.

Practically the same issue was raised in a suit brought by 12 secretaries against New York-based Sumitomo Shoji America, Inc., also a wholly-owned American subsidiary of a Japanese firm. The women claimed that Sumitomo's practice of hiring only male Japanese nationals for management-level position discriminated against them on the basis of sex and national origin.

Like C. Itoh, Sumitomo invoked Article VIII (para. one) of the 1953 treaty as a defense, claiming that it exempted Japanese trading companies and their wholly-owned subsidiaries in the United States from the application of Title VII. The New York district court rejected Sumitomo's argument, saying the treaty was not meant to protect the employment practices of Japanese subsidiaries incorporated in the U.S. Sumitomo is incorporated in New York.

Attorneys for Sumitomo took exception to the court's ruling that only Japanese companies or branch offices—not

The Treaty of Friendship, Commerce and Navigation passed under the Eisenhower Administration allows foreign companies located here to hire the management people of their choice.

subsidiaries—could invoke Article VIII (para. one) of the 1953 treaty. Sumitomo argued, "To hold that the Japanese business enterprise forfeits its rights under the treaty merely because it chooses to function through a wholly-owned locally-incorporated subsidiary would in our view disregard substance for form, something which we have previously rejected in treaty construction."

Sumitomo appealed to the 2nd U.S. Circuit Court of Appeals in New York, which upheld the lower court's ruling. "We affirm, but on grounds other than that relied on by the district court. We hold that Sumitomo was entitled to invoke the employment provisions of the treaty, but that the treaty does not exempt Japanese companies operating in the United States, whether or not they are incorporated in the United States, from American laws prohibiting discrimination in employment," the appellate court ruled.

Both the C. Itoh and Sumitomo cases have raised some interesting questions and issues, to say the least. The first being—can a treaty provision supersede domestic equal employment laws? The answer currently is split and it will probably take years to be resolved. Attorneys for Sumitomo have filed a petition requesting that the Supreme Court review the 2nd Circuit's decision, because of the direct conflict with the 5th Circuit's ruling.

In its petition, Sumitomo stated that "resolution of the conflict between the 2nd and 5th Circuits is essential to clarify the rights of foreign investors to manage and control, with key personnel of their choice, the enterprises they establish or acquire in the United States and the reciprocal rights of American investors to manage and control their enterprises abroad. Left unresolved, the difference between the two Circuits with respect to management and control of such enterprises creates significant uncertainties that could well impair the flow of foreign direct investment between the United States and other countries."

Furthermore, attorneys for the Equal Employment Opportunity Commission (EEOC), who have been involved in both cases, have filed a petition in the 5th Circuit requesting that the three jurists re-hear the C. Itoh case. The EEOC has also asked the entire court—15 judges—to review the facts of the case. A majority opinion will be needed to overturn the court's initial ruling.

The EEOC has been particularly critical of the 5th Circuit's decision, saying that it places foreign and foreign-owned companies on a more favorable footing than U.S. firms and is "repugnant to the purpose of the treaty."

Top Japanese Companies with U.S. Workers

Name of Company	Number of American Employees*
1. Alumax	8,200
2. Sanyo	2,200
3. Matsushita	2,000
4. Sony Corp. of America	1,700
5. Sony Magnetic Products Inc. of America	1,450
6. Kyocera Internatl. Inc.	1,400
7. Nissan**	3,100
8. Honda***	2,000

*Employment of 203 Japanese majority-owned firms in 1980 **Estimated 1983 employment ***Estimated 1982 employment

Source: Japanese Economic Institute

The Commission argues that "the panel majority ignored the plain language of the treaty which indicates that C. Itoh-America, by virtue of its New York incorporation, is a domestic company and is not covered by Article VIII (para. one)."

Even more importantly, the EEOC claims the court failed to distinguish between the treaty rights for branch operations of Japanese companies, and those for domestically incorporated subsidiaries of Japanese companies. The 1953 treaty only allows for branches of foreign companies to fill key positions with individuals "of their choice." C. Itoh does not operate as a branch, but rather as a wholly-owned subsidiary.

Two Japanese firms enter the court room and get two different opinions on the same question.

The EEOC cited a 1930 Supreme Court opinion supporting its claim. "If a company of Japan wished to safeguard a few superior legal rights under the treaty, it may choose to do business in the form of a branch office. But if the Japanese company seeks to gain the additional tax and legal benefits that our laws confer on American incorporated companies, they will create a separate legal entity under the aegis of American law. The line between Japanese incorporation and American incorporation is a bright and distinct one. If Japanese investors choose to cross that line in order to gain all the benefits of our legal system on a basis equal with American corporations, it is eminently reasonable that they accept legal responsibilities and duties on an equal basis as well."

One such responsibility would be Title VII of the 1964 Civil Rights Act. Despite arguments to the contrary, the EEOC believes that it would not be inconsistent with Article VIII (para. one) of the 1953 treaty to apply Title VII to Japanese companies in the U.S. The Commission reasons that Japanese employers—such as C. Itoh and Sumitomo—would still be free to choose employees on the basis of legitimate qualifications, including familiarity with the Japanese language and business customs. Japanese firms can legally demand such qualifications even if they "disqualify most non-Japanese individuals from consideration," according to the EEOC.

Furthermore, if a Japanese company can show by empirical proof that filling key positions only with Japanese nationals is essential to the operation of business, then the employer may take nationality into account as a bona fide occupational qualification (bfoq).

The bfoq clause of the civil rights laws makes it lawful to hire someone on the basis of religion, sex or national origin if it is "reasonably necessary" to the normal operation of a particular business or enterprise." ☐

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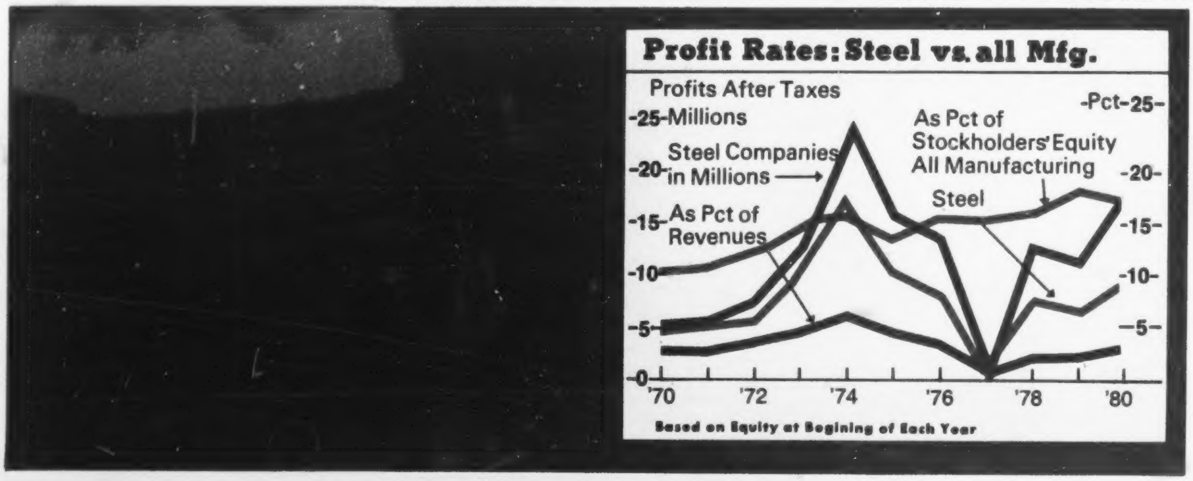

STEEL AT CROSSROADS—BUT IN BETTER SHAPE

There's improvement, says second Crossroads study. But more government cooperation is needed.

By Paul Cathey

In the past year the steel industry has made substantial progress—both in modernizing its plants and in enlisting the government's aid in solving its problems.

That's the conclusion reached in a new American Iron and Steel Institute (AISI) publication *Steel at the Crossroads: One Year Later.* It follows, by about a year and a half, an earlier study—*Steel at the Crossroads: The American Steel Industry in the 1980s.*

The new study states, "Despite their financial difficulties, the nation's steel companies have increased their rate of modernization." And it cites a "dramatic number of new projects" which have been publicly announced.

William J. De Lancey, chairman of the AISI and chairman of Republic Steel Corp., comments. "The domestic steel industry is confident that both the Reagan Administration and the Congress appreciate the basic importance of the steel industry to the American economy, and are developing policies which will help the steel industry to modernize. This report is both a recounting of progress of the industry in the immediate past and a vote of confidence in the future."

The new report notes actions which have been taken or proposed in both the Congress and the Executive Branch which address the steel industry's problems, either directly or through policies which affect all industry.

These include more rapid capital recovery, regulatory reform, modification of environmental regulations, and trade law enforcement. Administration positions on these subjects are called in the report "a strong positive move in the right direction."

It is extremely interesting to compare the summaries of the first and the second studies. At the end of the January, 1980 study the following account of key policy recommendations was given:

"The industry urges policy changes which speed capital recovery; change environmental regulations to more closely balance their costs with benefits to society; and enforce trade rules to ensure the industry's modernization program is not disrupted by dumped and subsidized imports.

"Policy changes in all of these areas are essential if the domestic steel companies are to modernize rapidly and improve their competitive position in the 1980s.

"The American steel industry supports the Administration's positions enunciated to date as a strong positive move in the right direction."

The new study first considers recent efforts at revitalization. Some of the key investment elements cited in the initial study were continuous casters sufficient to raise the percentage of domestic raw steel cast by this process to a level more in line with foreign competitors; new coke ovens to replace 50 pct of current capacity; large, modern blast furnaces; and modern, more efficient basic oxygen and electric furnaces.

"The member companies of the American Iron and Steel Institute continue to recommend that the appropriate government authorities implement a number of measures that are critically needed to enable the companies to embark aggressively on modernization and revitalization programs. These measures include:

—"Policies that would encourage and permit steel companies to achieve competitive rates of return, accompanied by provisions for accelerated recovery of capital costs.

—"Modifications of government-mandated regulatory programs (notably environmental) that would reduce non-income-producing capital demands and would avoid unnecessary increases in operating costs associated with such facilities.

—"Firm assurances that imported steel, either by excessive volume or unfair pricing, will not disrupt the

Steel Industry's Cash Flow

Millions of Dollars

	Profits After taxes	Depreciation, Depletion, etc.*	Gross Cash Flow	Cash Dividends	Net Internal Sources	Capital Expenditures
1970	532	1,128	1,660	488	1,172	1,736
1971	563	1,123	1,686	390	1,296	1,425
1972	775	1,216	1,991	402	1,589	1,174
1973	1,272	1,329	2,601	443	2,158	1,400
1974	2,475	1,553	4,028	674	3,354	2,115
1975	1,595	1,591	3,186	658	2,528	3,179
1976	1,337	1,614	2,951	637	2,314	3,253
1977	22	1,888	1,910	555	1,355	2,850
1978	1,277	1,968	3,245	536	2,709	2,595
1979	1,154	2,453	3,607	593	3,014	3,312
1980	1,632	2,235	3,867	602	3,265	3,319

*Includes changes in reserves. Source: American Iron and Steel Inst.

domestic steel market, particularly during the industry's revitalization efforts.

"Effective measures in all three critical areas are urgently needed if America is to maintain a solid industrial base supported by a modern, competitive steel industry."

Contrast that with the summary of the second study—*Steel at the Crossroads: One Year Later.*

"Steel companies are making progress in their efforts to modernize and become more competitive. Government policies appear to be headed in a direction which could speed progress. However, what has been done is merely the beginning. Much more needs to be done: by the steel companies through the installation of more modern facilities and by government in the form of policy changes."

After listing a page and a half of improvements in these areas the new study adds, "Steel companies, constrained by capital availability, are still spending less for new facilities than needed under the rapid modernization scenario."

(This scenario, described in the 1980 study, envisioned an average yearly investment of $7 billion (in 1978 dollars) during the 1980s to meet world-wide steel demand.)

The *One Year Later* study adds, "The rate of modernization needs to be increased substantially. Steel companies can be expected to continue their modernization efforts. However, only with changes in government policies will they be able to accelerate their rate of modernization in the 1980s."

The final part considered in this section of the new study is financing of modernization. It's noted, "The Steel Tripartite Advisory Committee—a government advisory committee comprised of government, labor and industry representatives—during 1980 quantified the industry's financial shortfall (funds available from all sources versus capital required for modernization and environmental needs).

"Under then current policies, the shortfall was calculated at $1.7 billion to $2 billion a year over the next five years. The Steel Tripartite Committee also recognized that government extension of time to meet environmental goals as well as faster capital recovery (including refundability of the investment tax credit) could reduce the industry's capital shortfall significantly. At the same time the Steel Tripartite Committee assumed that the industry would do its part to speed modernization."

Steel at the Crossroads '81 then goes on to explain that in order to reduce some part of the estimated shortfall, steel companies have made progress in getting additional funds from both internal and external sources.

The second section of the new study is entitled *Increasing Awareness of Industry Problems.* It leads off with this statement:

"An increasing awareness of this nation's need for a strong industrial base has developed at all levels of government and in the public. It is now widely recognized that a healthy domestic steel industry is essential to a strong industrial base.

"Governmental recognition (both by the executive and legislative branches) of the problems facing industry is a major step toward development of government policies and programs designed to enhance rather than impede the self-improvement efforts of steel companies."

The study then describes the areas where such governmental action has begun. They include:

—Steps toward more rapid capital cost recovery.

—Regulatory reform.

—Modified environmental regulations.

—Improved trade law enforcement.

The final section of the study is entitled *Actions Are Still Needed.*

It leads off with this statement: "The major problems affecting the industry continue to be inadequate capital formation, unfair international trade, and excessive environmental regulation.

"While getting control of the national budget and an excessive rate of inflation, the government must also contribute to solving these other problems if the nation is to regain its strength and continue as the leader of the free world.

Then the study enumerates the steps that must be taken. Included:

—Capital recovery must be accelerated.

—Other tax policy changes are needed. These could include current use of earned investment tax credits, broader energy tax credits, and discontinuing a corporate "minimum tax."

—Environmental regulations, as noted above, must be changed.

—Regulatory changes can be made.

—Clean Air Act changes are needed. The stretch-out amendment on the Clean Air Act is important to steel.

—Clean Water Act changes are needed. ☐

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RESHAPING THE VISION

REBUILDING COMPETITIVE STRENGTH

American industry has been under siege and ill-equipped to defend both itself and its markets. But the tide of the battle may now be turning.

By Michael Marley

General William Tecumseh Sherman offered a terse but pointed description of war as hell more than 100 years ago and in the intervening years the two words have become almost synonymous.

If we could resurrect his insight, make it a captain of industry instead of a military commander and send it marching through the state of American business during the past decade, what observation would it offer?

It is not that anyone expects the world of commerce and industry to be a paradise. Business is a competitive environment, one where only the fittest thrive.

It is that the state of American business is under siege today as never before. On the one flank are battalions of overseas competitors, supported by their governments and financed by their national banking systems.

On the other is a regiment of government regulators armed with outmoded policies and restrictive laws—once the ally of American business, now one of its fiercest foes determined, it seems, to sap every ounce of strength and ambition from its erstwhile friend.

Even industry's own troops, its

[redacted]

workers and the public that consumes its goods, seem to have lost faith in the system … lost the knowledge that its survival in a very real sense determines their survival as well.

So what if a Chrysler Corp. teeters on the brink of bankruptcy, some were heard to say in recent years, let it fall. Don't consider the fact that when it goes down, it takes with it a host of smaller companies and an even larger number of jobs and incomes.

There is hope that the tide of battle can be turned, that the nation's stagnant economy can be revived and made to fight not merely for its survival but for the leadership position that it has held for most of this century.

That hope lies in part with the Federal government and the economic policies it pursues. It also lies with industry and its ability to muster its forces, to become more productive and to produce products recognized for their quality both in their home markets and throughout the world.

During the late 1800s and the earlier years of this century, the Federal government followed what was called a *laissez-faire* or lack of policy regarding industry and business. Companies and entrepreneurs could wrestle with themselves and the forces of the marketplace, and let the best win.

But that absence of policy also contained the seeds of its own destruction. In the Great Depression of the 1930s, neither business nor the marketplace were capable of bringing about an economic revival. It was left to government to step in.

That first step, most economists and historians agree, came during the Roosevelt Administration when Keynesian economic policies were applied to alleviate unemployment. Once that first step was taken, it wasn't too long before government took another step, then another. Soon, it strayed from the path of support and became an ardent antagonist.

If we could fine tune the economy with policies and laws, so the thinking went, why not use the same tools to improve the quality of life as well. The intentions were good; it was the means to achieve them that were wrong.

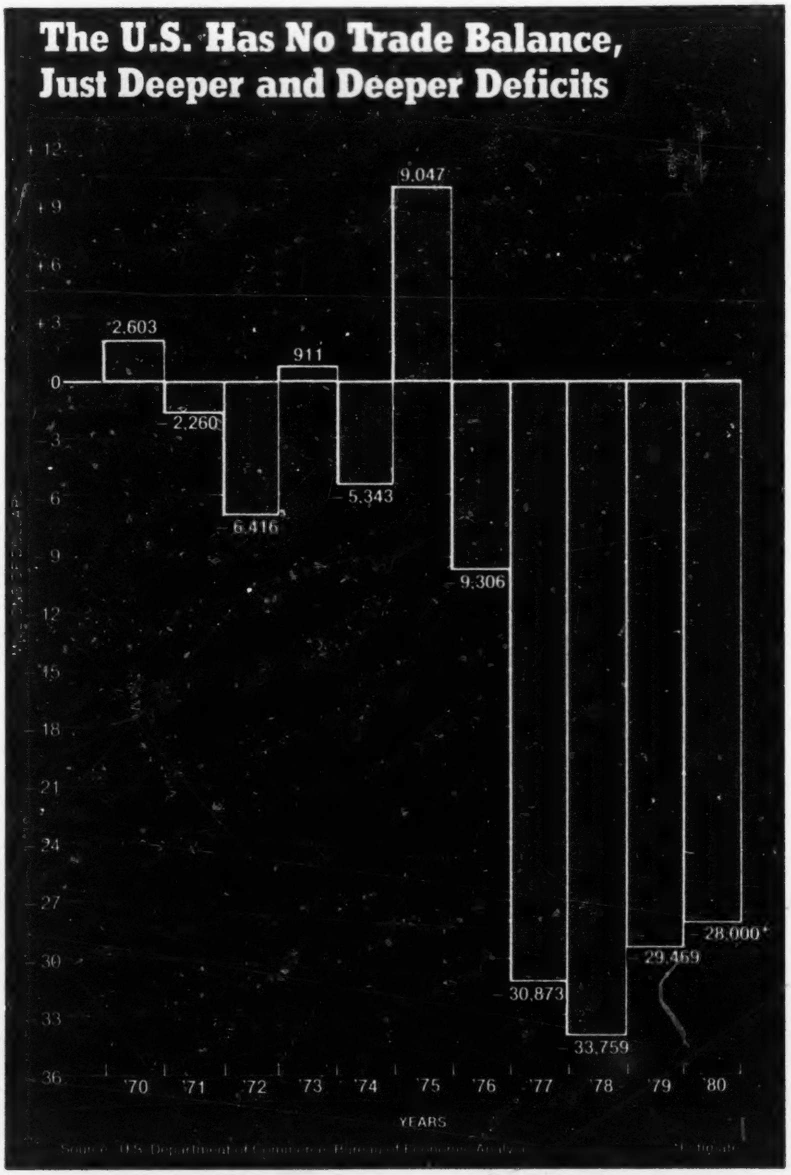
Consequently, governmental intervention in the economic life of the United States has become so pervasive in recent years that few industries can claim to be unconcerned about what occurs on the banks of the Potomac. To be sure, the days of *laissez-faire* economics are gone; government will keep playing a major role in the economic and business life of the nation.

Recently, however, that government vs. business relationship seems markedly less adversarial … government seems less willing to hold a cocked gun to its former compatriot's head and more aware that industry's strength is being sapped both from within and without.

Although the climate for such a change has been building for several years now, the critical turning point in the battle came last November with the election of Ronald Reagan to the presidency. Mr. Reagan, a former movie actor and two-term governor of California, is a stark contrast both to his populist predecessor, Jimmy Carter, and the antagonistic, anti-business trend of the Federal government.

Mr. Carter took office in 1977, a relatively unknown public figure with a vaguely defined attitude toward American business. Over the succeeding four years, he did little to reverse the anti-business trend of the Federal bureaucracy and even less to reassure those uncertain of his economic policies.

That plus the public perception of him—both at home and abroad—as an indecisive and inconsistent pol-



The U.S. Has No Trade Balance, Just Deeper and Deeper Deficits

Source: U.S. Department of Commerce, Bureau of Economic Analysis   *Estimate icymaker provided industry's leaders and investors with little of the confidence they needed.

Mr. Reagan, by comparison, is a distinctly conservative politician with a strong pro-business stance. More importantly, though, he conveys an air of confidence which arouses a sense of ability that some might regard as uniquely American ... a sense that any problem can be faced and resolved to a satisfactory conclusion.

Political observers and pundits call that image or style and measure it in much the same way as the early Church fathers counted the number of angels on the head of a pin—each a different total.

Whatever way it's measured, there's little doubt that such a visceral quality has merit and impact. With it, there can be some national consensus that the problems to be faced are not insurmountable. Without it, there can only be a continuing feeling that the nation is adrift ... without purpose, without direction, without a future.

Image and style also help to unify and carry the controversial elements of his proposed Economy Recovery Program, a scheme that will radically alter the way that government conducts its business in this country and one that has stirred some debate about the likelihood of its expected results.

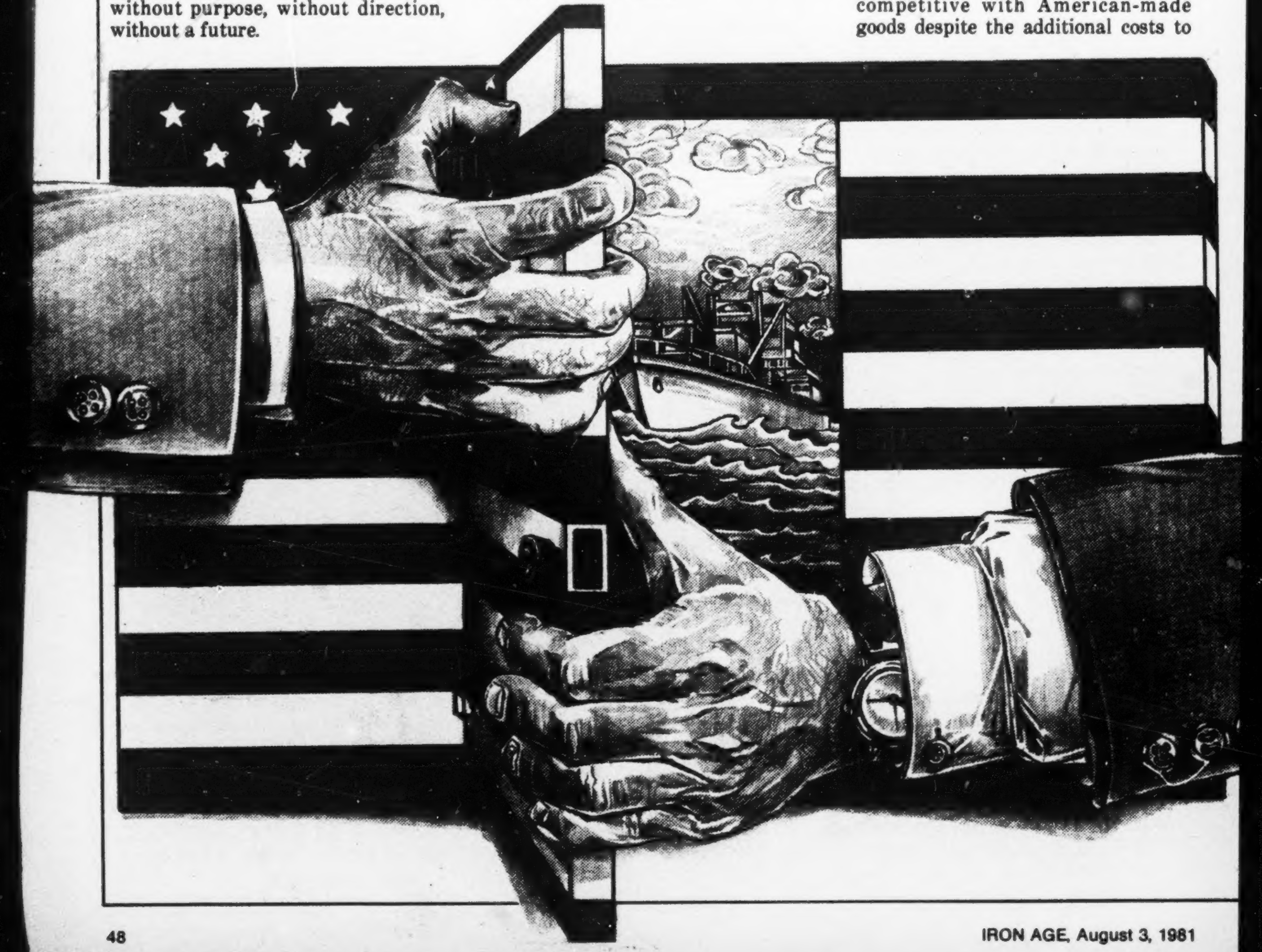
The changes Mr. Reagan has called for span the range of the Federal government's activities, from its taxing policies and spending programs to the host of regulatory agencies and their actions.

In terms of tax policy, the element with the most direct bearing on the near term course of industry's battle for survival is the change in the methods of depreciating capital investment. Under current tax law, business can depreciate its costs for new building and equipment on what is called a historical basis, in other words over the life of the equipment, be it 10, 20 or 25 years.

In an economy that depends heavily on capital to produce much of its goods and has suffered through several years of spiraling inflation, such a system makes it difficult if not impossible to renew the nation's industrial strength.

It is easier and cheaper to simply add a few more workers to the payroll in the brief boom periods and lay them off when demand slackens. That does little to improve the productivity of the nation's industries; it merely feeds the cost-push spiral of prices, perpetuating and in some instances exacerbating inflation.

At the same time, foreign industries, both the producers of finished goods and the suppliers of raw or semi-finished materials, have been able to boost their productivity through regular renewals and updating of their manufacturing processes. As a result, they have been able to lower the prices of their goods, so low in some cases that they are competitive with American-made goods despite the additional costs to



ship to U.S. markets.

As imports claimed larger niches in American markets, some industries reacted by demanding protection—higher tariffs and quotas. More, however, recognized that their overseas competitors were able to produce their goods cheaper because of lower labor costs and, in some instances, more modern production methods.

Since it is almost impossible to bring down labor costs once they have ratcheted up and little to be gained by barricading the ports, there was only one route to take to become competitive again—more up-to-date manufacturing methods. In terms of policy, that took the form of a plea for accelerated depreciation on capital invested in new plants and machinery.

A handful of Congressmen heard that request and translated it into the Capital Cost Recovery Act, or so-called 10-5-3 bill. But at that time, the measure seemed unlikely to make it through the lawmaking process, in part because of partisan politics but also because of the potential revenue losses for the Federal government.

When Mr. Reagan took office earlier this year, he incorporated the 10-5-3 proposal into his package of measures aimed at reducing the tax burdens and government spending. His message was clear when he spoke to a joint session of the Congress last February:

"The present depreciation system is obsolete, needlessly complex and economically counterproductive. Very simply, it bases the depreciation of plant machinery and vehicles and tools on their original cost, with no recognition of how inflation has increased their replacement cost....

"These changes (in the depreciation system) are essential to provide the new investment which is needed to create millions of new jobs in 1985 and to make America competitive once again in world markets."

While 10-5-3 (or 15-5-3, as it should now be known, since Mr. Reagan revised the scheme by stretching out the schedule on new business building from 10 to 15 years in an effort to get it through the Congress) is surely the critical measure as far as business and industry are concerned, it is not the sole weapon the policymakers in Washington might add to the nation's economic arsenal in order to rebuild America's competitive strength. Other proposals to spur capital investment, though not necessarily sourced or supported as strongly at the White House, include a lowering of the capital gains tax, reductions in the corporate tax rates and a tax exemption on interest income from individual savings.

It is unfortunate that the Carter Administration's response to the pleas for accelerated depreciation was both slow in coming and never matched the simplicity of the 10-5-3 plan. In brief, it called for slightly faster and simpler capital depreciation, tax credits for ailing industries, more Federal funds for research and development, and rail and highway rehabilitation.

Like much that has emanated from Washington in recent years, it was a complex and bewildering response to what many in industry saw as a clear-cut problem. It could be argued that it was textbook-right. Nevertheless, it seemed to create more confusion than confidence—that angels on the pinhead variable that can make or break any recovery effort.

As imports claimed larger niches in American markets, some industries demanded protection.

Complexity has been the underlying theme to much of the Federal government's actions in recent years—not only in terms of tax policy but also in almost every area of regulation. And it is not merely that the rules are more complex, it is that there have been more and more of them in recent years.

While not all were either unneeded or unwanted, such stringent requirements as zero discharges of pollution and zero-risk working environments do require sizable tradeoffs in terms of the capital needed for expansion and revitalization.

But there are indications that the tide may be turning in that field of American industry's battle to remain strong and competitive. The regulatory industry was itself hit with a fairly stiff but simple regulation when the new Administration took office—a 60 day moratorium on all regulations that were to become effective before March 29 and a prohibition against issuing any new rules during the period.

Following that, the Task Force on Regulatory Relief was established under Vice President George Bush. Its assignment was three-fold: examine all new rules now proposed but not yet in force; re-examine all those already on the books, concentrating on those that are the biggest burdens to the economy and key industries; and develop legislative proposals to balance and coordinate the objectives of the Federal regulatory agencies.

The first results of that panel's work came in early April. It announced that the Federal government intended to delay or rescind some 35 regulations specifically affecting the nation's financially troubled auto industry.

At the time, Secretary of Transportation Drew Lewis predicted that the changes along with the President's revitalization program would restore 200,000 jobs that the auto industry and its suppliers had lost in recent years.

The changes would also, the task force hoped, restore some of the industry's sales and profitability and, as a result, help pay for the massive retooling currently underway in Detroit and elsewhere.

From the industry's side, the initial phase of deregulation was long on sizzle and short on substance. Many had hoped that the first step of deregulation would have gone a lot further, would have killed many of the newer, stiffer rules instead of merely delaying their effective dates. Still, most in the industry regard the action as at least a step in the right direction.

For the auto companies especially, some easing of the burden of Federal regulations is almost required if they are to recover and be a part of America's effort to rebuild its competitive strength.

The auto industry is at a critical juncture in its history. Its losses totaled in the billions of dollars in 1980 and it was forced to lay off an estimated 300,000 workers just in that year. The auto industry's problems are magnified, in a sense, because of the sheer size of the industry and the relatively few major producers. They seem, however, to be on the leading edge in terms of recognizing what must be done to remain competitive.

The outmoded tax laws and increased regulation have severely limited the capital available to the nation's mature industries like autos and steel during the past decade. In the meantime, their overseas competitors have been able to fund the investment in new manufacturing technologies. These have served to reduce their costs and, as a consequence, made them competitive in the world's single, largest national market—the United States.

Ever rising imports didn't strike much fear in the minds of Americans until the nation's auto industry was affected.

Nor, did they realize that imports were the basic problem. The same complaints had been heard from a host of other American industries—ranging from steel to bearings and fasteners—for several years before the auto industry debacle.

The Federal government's recognition that more than imports was the source of trouble came in the latter years of the Carter Administration. In 1978, then Secretary of Transportation Brock Adams told the auto industry that it must re-invent the car. A year later, his successor, Neal Goldschmidt, talked about re-inventing the auto industry.

Another few months passed and the topic was not merely re-inventing the auto industry, but the entire American industrial infrastructure.

A new buzzword was born: Reindustrialization.

Ironically, despite the shortage of investment capital, reindustrialization had been going on long before the sense of crisis reached Washington. A brief review of the spiraling orders and backlogs of the nation's machine tool builders during the past four years would have revealed that.

Much of the American machine tool industry's output was—and to a large degree still is—tagged for delivery to Detroit. General Motors Corp., the nation's third largest industrial corporation, offered a glimpse of the vast extent of this revamping of manufacturing in 1980 when it allocated an estimated $40 billion to be spent over the succeeding four years on new plants and machinery.

That, it should be noted, is the sum that only one American manufacturer (although, admittedly, a very large corporation) estimated it must spend to maintain its competitive position. The total for all American industry and its supporting infrastructure—roads, ports and other facilities—could easily total in the trillions of dollars over the next five years.

There is simply no question that it must be done. The question is what must be done.

One answer is to increase the nation's industrial productivity, increase the amount of goods produced per worker or per machine and, as a result, reduce the costs of production. That is probably the best route that American industry can take to rebuild its competitive strength and provide the jobs and wages that drive this economy.

All but a few years ago, modern manufacturing technologies were . . . read or heard about, but rarely seen.

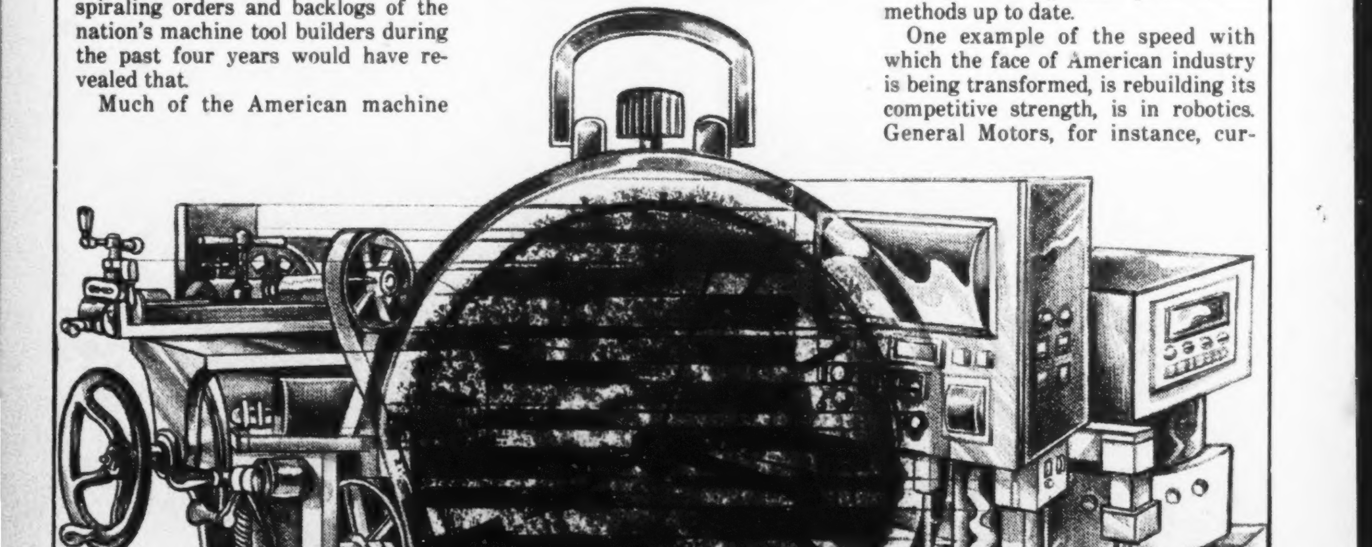
There is also no question that it is being done.

The auto industry's capital expenditures are but one example. The nation's steel industry, even though its profitability has been poor in recent years, has shut down a number of its oldest plants, replaced many of its aged open hearths with modern efficient electric arc and basic oxygen furnaces and installed continuous casters wherever and whenever the cost could be justified.

Further along American industry's production line the changes are even more dramatic. All but a few years ago, manufacturing technologies such as flexible manufacturing systems and CNC machining were something that many engineers and operations managers read or heard about but rarely saw in action.

Today, however, because of the need to remain competitive in what are fast becoming worldwide markets—not merely American—managers in automotive, farm and construction equipment and other durable goods industries are moving swiftly to bring their productions methods up to date.

One example of the speed with which the face of American industry is being transformed, is rebuilding its competitive strength, is in robotics. General Motors, for instance, cur-



rently has an estimated 300 robots in its factories. By 1983, it will add another 2,000 and, by 1990, the robot population at GM is expected to reach 14,000.

Others are moving in the same direction and at the same speed. Westinghouse plans to have an estimated 250 robots in its plants by the end of this year. General Electric Co. is moving on a scale close to that of GM.

Smaller manufacturers, many of whom are batch manufacturers supplying parts to the OEMs, are likewise taking robotics seriously. One estimate predicts that industrial applications of robots will rise fifty-fold over the next decade—from 2,000 this year to more than 100,000 by 1990.

Manufacturing technology is one facet of this new emphasis on productivity, on rebuilding America's competitive strength. Another is the increased attention being paid to such traditional industrial nightmares as inventory management.

Material along with labor and capital are the three elements of a production equation. Unfortunately, in terms of productivity and especially in American industry, the other two have historically received most of management attention while inventories or work in process were all but neglected.

That may no longer be the case, possibly because of the staggering costs that many managers realize they are facing when, say, a pallet of castings sits on the machine shop floor for two weeks or more. The longer they sit, the longer the company must wait for the cash they are expected to bring in and the higher the cost to buy the next batch.

The expensive meaning of inventory costs was driven home during the inflationary days of the 1970s. American industry in general increased its stock turnovers by about 20 pct over the past decade. Some, however, through the use of computerized MRP systems doubled the number of inventory turns and consequently further increased profitability.

Productivity through materials management is a notion that, along with efficient production, has not been lost on American industry's overseas competitors, particularly those on the other side of the Pacific Ocean. Japanese manufacturers have concentrated their efforts on materials management, probably because they must import most of the raw materials required by their industries.

Japan's automakers, for example, turn over their inventories at a rate double that of their U.S. competitors. The figures are even more startling for that nation's auto parts industry, which turns over its stock three times faster than its counterparts in the U.S.

The benefits of a fast inventory turnover are readily apparent: a speedier cash flow cycle that translates into higher profitability and that, in turn, provides more money to invest in improved production methods.

The last variable in the production equation—labor—is perhaps the one that will make or break American industry's efforts to rebuild its competitive strength.

Beyond all the consultants' studies and suggestions for tapping the human side of productivity, there are still some basic structural characteristics of the American labor force that pose barriers to increasing productivity vis-a-vis competing overseas industries.

Quality in one sense is a lot like beauty: It is in the eyes of the beholder.

For example:

—Hourly compensation for all manufacturing in the United States is now about $10. In Japan, as a contrast, it is about two/thirds that figure. In less developed countries, wages and benefits are even further down the scale.

—In American industry, labor management relations are distinctly adversarial. Management and the company are, in the eyes of many workers, one and the same and separate from the work force. In reality, though, it is the company that provides a livelihood for both the plant superintendant and the assemblers.

—If it's in the contract, it cannot be changed. Pay rates, COLAs, job descriptions and incentive standards are difficult to alter at the bargaining table, even though they may be outdated and a major reason why a company cannot compete in its own home market.

There are also changes in terms of the demographics and the goals of the work force that will require a rethinking on the part of managers if they are to rebuild American industry.

The nation's declining birth rate, for instance, means fewer and fewer young people will be available for the lower skilled jobs that once brought them into the work force. And many in that dwindling labor pool are better educated and have goals unlike those of their fathers and grandfathers. They have different lifestyles and work values, different concepts of the family breadwinner and spouses whose jobs are equally important.

While many of these changes are evolutionary rather than revolutionary in their impact on industry, they are nevertheless changes in traditional labor dynamics.

What impact these two forces—the historic adversarial relationship between labor and management and the changes in the composition and values of the work force—will have on industry over the near term is difficult to assess. The speed of automation may help to solve one problem—the dwindling labor pool—but it is the raft of other changes that still must be dealt with.

There are some signs that management and labor are beginning to reevaluate their traditional roles. In the nation's steel industry, for example, the quality circle concept popularized by Japanese manufacturers was made a part of the industry's new labor agreement. The hope is that it will increase productivity and lessen the long standing antagonism between labor and management.

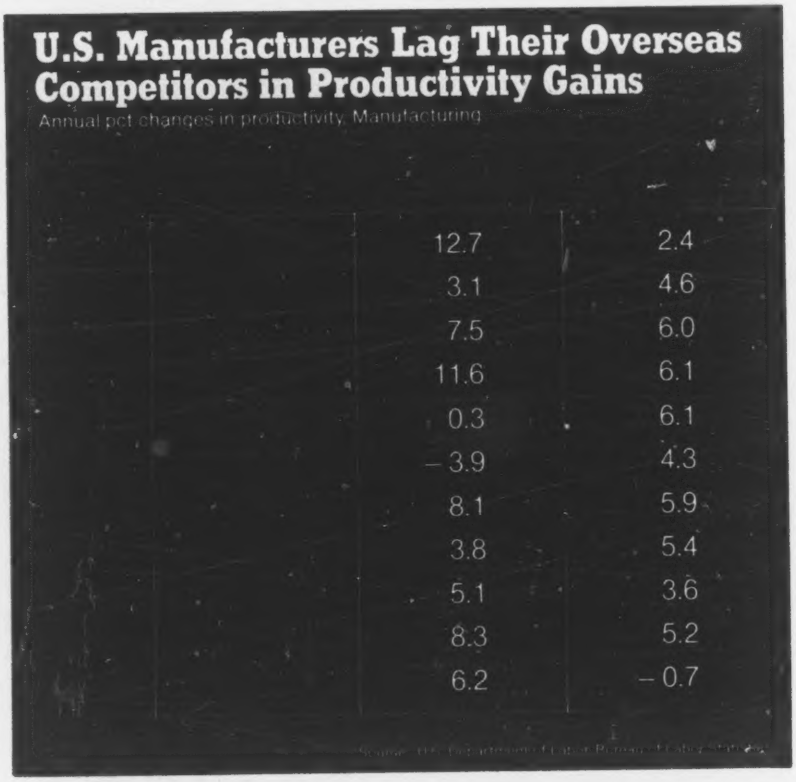
There are other indications that both managers and workers are rethinking their traditional roles. Most, however, are individual efforts in the sense that they are now occurring at one or a handful of companies. Perhaps, simply the fact that they are underway is a sign that two historic antagonists can work together.

Even if American industry renews its aging plant and machinery and achieves some labor-management consensus to work together, the campaign to rebuild its competitive strength is not finished. It still must wage that battle for the marketplace, that battle for the hearts, the minds and the spendable income of consumers.

Producing cheaply and efficiently once seemed like all an American manufacturer need to do to gain a foothold in his home market. That, however, no longer appears to be the case.

Despite inflation, many American wage earners (and thus consumers) have made substantial gains in income in recent years. Those improvements plus the rise of consumerism has generated a demand not merely for more goods but for better quality products.

To some managers, the notion of American consumers demanding better-made cars, televisions or appliances from American manufacturers might seem a little odd. Not more than a decade ago the words "made in U.S.A." were synonymous with the best, while the tag "made in Japan" was a euphemism for cheap junk. While the meanings have not reversed, the words made in Japan on a television, a wristwatch and even some autos now represent a better quality product.



U.S. Manufacturers Lag Their Overseas Competitors in Productivity Gains

Annual pct changes in productivity, Manufacturing

Source: U.S. Department of Labor, Bureau of Labor Statistics

American manufacturers have become complacent about quality, some industry critics argue; they take for granted the label U.S.-made means the best. That complacency, in addition, has also allowed them to lose touch with the marketplace, either failing to hear or simply ignoring the consumers' cries of dissatisfaction. Quality in one sense is a lot like beauty: It is in the eyes of the beholder and buyer.

Such an explanation may be valid, but it is too simple to answer the question. More to the point might be the reasons cited by Dr. Joseph Juran, a widely respected expert on quality.

In a recent *Iron Age* article, Dr. Juran noted that the problem is not that quality of American-made products has deteriorated, but that the quality of Japanese goods has risen much faster than the improvements made by American manufacturers. That fast pace continues today. But according to Dr. Juran, it took the Japanese several decades to achieve and a top-to-bottom commitment on the part of the various companies' workers and managers.

Because of the stigma attached to their products, Japanese manufacturers had little choice but product quality improvement if they were to gain the worldwide markets they value so dearly. American industry may have little choice if it is to keep the domestic markets on which its survival depends.

American manufacturers are moving in this direction. The wide-spread interest in the Japanese quality circles concept is one indication. Whether it can be successfully (or for that matter should be) applied on a broad basis in this country is questionable.

The labor-management relationship in Japan is conducive to the quality circle concept. In many American industries, such a mechanism might not produce all that is expected of it and as a consequence only serve as another source of bitterness and antagonism between workers and management.

What might be more appropriate is that sense of commitment from the executive suite down to the assembly line to which Dr. Juran refers. If it is merely the foreman or shop superintendent and no higher in the corporate organization there is only a partial dedication to the notion of making better products. And there is room for the system to break down, room for more than a few managers to say, "That's not my responsibility."

Such a commitment may be needed because American manufacturers can no longer rely on the American consumer to buy their products simply because they were made in America. Today's consumers—whether a house wife or a corporate purchasing manager—are much too sophisticated and discriminating to accept such a rationale.

They are also aware that more and more of the products they buy with American-made brand names are not made entirely in the U.S. and, in some instances, both the product and the name tag were produced and assembled overseas.

The economic world has grown smaller in a sense; the entire producer-retailer-consumer chain has been shrinking in recent years. The United States is no longer the self-sufficient economic island it once seemed to be. Though some may have thought it was, the oil crisis of 1974 surely demonstrated that even if it once was true, it is no longer.

Equally foolish is the notion that the U.S. should simply write off all its mature industries and become the service economy to the world. This nation should simply recognize that it can no longer produce some products as cheaply and efficiently as it once did, some believe.

Since the U.S. is still the largest consumer market, American industry should continue to grow, rebuild its competitive strength and not simply reclaim the domestic niches that it has lost but carry the contest to the shores and home markets of its overseas competitors. ☐

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EFFECTIVE JULY 20, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	258	265	251	224
Buffalo	68	70	66	46
Pittsburgh	402	383	439	311
Youngstown	123	113	135	87
Cleveland	173	160	180	129
Detroit	172	166	170	80
Chicago	563	550	631	387
Cincinnati	95	94	106	85
St. Louis	67	76	92	58
Southern	254	247	238	243
Western	144	152	148	117
U.S. Production	2,319	2,276	2,456	1,767

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective July 20, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,319	2,276	71,496	63,090
Capability Utilization Rate	78.4	77.0	84.1	74.8

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.739
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 90.17	$ 90.17	$ 89.17	$ 68.83
No. 2 bundles	$ 61.17	$ 61.17	$ 61.17	$ 49.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$102.50	$99.50	$ 69.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	74.50
No. 1 steel, Chicago	88.50	88.50	88.50	62.50
No. 1 bundles, Detroit	91.50	91.50	91.50	60.50
Low Phos., Youngstown	96.50	96.50	96.50	70.50
No. 1 mach'y cast., Pgh.	94.50	94.50	99.50	85.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	115.50
No. 1 mach'y cast., Chi.	124.50	124.50	124.50	112.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

* * Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

* * * Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective July 20, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.00-84.00	82.85-84.00	7/20/81
Lead	42.00	41.00-42.00	7/14/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$412.50
Indium, 99.9%, troy oz.	$8.75-$10.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$430-$435
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$8.94
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

July 13—569.70
July 14—568.40
July 15—570.30
July 16—578.21
July 17—599.50

Scrap Prices

Brass Mill Scrap
(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	61	61

Custom Smelters Scrap
(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	65
Light copper	55

Ingot Makers Scrap
(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	69
No. 2 copper wire	61
Light copper	5[illegible]
No. 1 composition	69
No. 1 comp. turnings	67

Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	35 —36
Old sheet	32 —33
Old cast	32 —33
Clean dry borings	33 —34

Dealers' Scrap
(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	38 —39
Mixed L.C. clips	30 —31
Old sheets and cast	23 —24
Boring and turnings	19 —20
Duraluminum clippings	38 —39

Copper and Brass

No. 1 copper wire	63 —64
No. 2 copper wire	52 —53
Light copper	50 —51
Radiators	42 —43
No. 1 composition	56 —57
No. 1 composition turn'gs	54 —55
Cocks and faucets	39 —40
Clean heavy yellow brass	34 —35
Brass pipe	39 —40
New soft brass clippings	49 —50
Yellow brass rod ends	42 —43

Lead

Heavy soft lead	15 —16
Whole batteries	7 — 8
Type metal	16 —17
Electrotype	29 —30

Nickel

Nickel solids	160 —175
Nickel rod ends	160 —175
Nickel sheets, clips	160 —175
Nickel turnings	110 —115

Zinc

New zinc clippings	19 —20
Old diecast zinc	12 —13

EFFECTIVE JULY 20, 1981

MATERIALS NEWSFRONT

(Effective July 20, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	86.00 to 87.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	116.00 to 117.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	120.00 to 121.00
Heavy turnings	86.00 to 87.00
No. 1 RR hvy. melting	111.00 to 112.00
Rails, 2 ft. and under	120.00 to 121.00
Scrap rails, random lgth.	103.00 to 104.00
RR specialties	117.00 to 118.00
No. 1 machinery cast	94.00 to 96.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	103.00 to 104.00
No. 1 factory bundles (auto)	107.00 to 108.00
No. 2 dealer bundles	64.00 to 65.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	104.00 to 105.00
Shredder scrap	103.00 to 104.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	119.00 to 120.00
Low. phos. punchings plate ¼ in. and heavier	130.00 to 131.00
Low phos. 2 ft. and under	123.00 to 124.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	99.00 to 100.00
Reroller rails	129.00 to 130.00
Rails, 2 ft. and under	129.00 to 130.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	104.00 to 105.00
Stove plate	99.00 to 100.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	665.00 to 675.00
18-8 turnings	540.00 to 550.00
430 bundles and solids	155.00 to 165.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	108.00 to 111.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	103.00 to 106.00
Shredder scrap	88.00 to 91.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	98.00 to 101.00
Low phos. 2 ft. punchings	118.00 to 121.00
Electric furnace bundles	115.00 to 118.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	118.00 to 121.00
Cupola cast	78.00 to 81.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to $ 72.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	90.00 to 91.00
Drop forge flashings	69.00 to 70.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	39.00 to 40.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	640.00 to 650.00
18-8 turnings	490.00 to 500.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 dealer bundles	58.00 to 59.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	96.00 to 97.00
Electric furnace bundles	96.00 to 97.00
Galvanized bundles	83.00 to 84.00

Cleveland

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	56.00 to 57.00
No. 1 dealer bundles	104.00 to 105.00
No. 1 factory bundles	106.00 to 107.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	120.00 to 121.00
Low phos. punchings plate	120.00 to 121.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	91.00 to 92.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	129.00 to 130.00
Rails, 18 in. and under	130.00 to 131.00
Steel axle turnings	71.00 to 72.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	81.00 to 82.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	91.00 to 92.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	81.00 to 82.00
Structural and plate, 2 ft.	109.00 to 110.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	90.00 to 91.00
Rails, 18 in. and under	114.00 to 115.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	80.00 to 81.00
No. 2 bundles	43.00 to 44.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Low phos. 18 in. and under	100.00 to 101.00
Rails, random length	80.00 to 81.00
Rails, 2 ft. and under	103.00 to 104.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 62.00 to $ 64.00
No. 2 hvy. melting	54.00 to 56.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	74.00 to 76.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	78.00 to 80.00
No. 2 bundles	65.00 to 67.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	89.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	86.00 to 88.00
No. 2 bundles	57.00 to 58.00
Machine shop turn.	17.00 to 19.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	79.00 to 81.00
Cupola cast	95.00 to 97.00

STEEL PRICES

Codes identify Producers listed in the Key on page 81. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$366.00
N4	$366.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), R3, C10	$400.00
Midwest	
R3, U1, W5	$420.00
W8	$400.00
S1	$420.00
C10	$400.00
K2	$400.00
W5	$400.00
West	
B3	$430.00
C6	$420.00
South	
A7	$400.00
Alloy, East	
R3, C10	$436.00
B3	$459.00
Midwest	
W8, W5	$459.00
S1, U1	$459.00
R3	$436.00
West	
B3	$469.00
C6	$469.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	22.85
U1	22.15
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	22.15
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	22.15
C6	21.90
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	20.80
J3	20.80
Midwest	
A7	18.45
D1	20.80
S1, J3, D1	20.80
W3	20.80
N4	17.50
W5	20.80
U1	20.80
B3, G2, I3, I4, M2, R3, J3, G3	20.80
West	
K1	20.00
B3	24.70
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
U1	33.25
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	33.25
J3	Cmp*
T4	Cmp*
West	
U1	33.25
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	20.80
A7	19.50
S1	20.80
I3	19.50
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	32.00
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.20
G4	25.80
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
S1	39.90
Midwest	
I4	41.75
S1	37.65

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	20.80
J3	20.80
U1	20.80
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	24.65
S1, W5, D1	20.80
J3	20.80
I4	19.50
West	
U1	21.30
K1	20.00
South	
R3	19.50
Cold-Rolled, East, Class I	
B3(2), U1	24.65
J3	24.65
Midwest	
B3, I3, G3, R3, M2, U1(2)	24.65
G2, W3, M11	24.65
I4	22.00
J3, A7	23.15
S1, W5, D1	24.65
West	
U1	25.15
South	
R3	23.15
Galvanized (hot-dipped), East	
B3(2)	27.15
Midwest	
J3, D1	27.15
I3, W5, S1	27.15
U1, A7, R3, Y1	27.15
G2, W3, M11	27.15
West	
K1	25.75
South	
U1	27.15
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	26.15
S1	26.50
Long-Terne, Midwest	
W5	28.30
A7, U1	27.75
R3	25.85

*Composite pricing

Wire Rod

East	
B3(2)	22.35
U1	22.35
Midwest	
A7, N4	22.35
U1	22.35
K2	22.35
J3	22.35
West	
C6	21.45
B3	23.25
U1	22.35
South	
G7	22.35

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	17.30
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	23.95
R5	23.95
B3(3), J3	23.95
U1, C10	23.95
Midwest	
A7, C20	23.95
N4	23.95
W8, U1, I3, I4	23.95
R3, T10	23.95
K2	23.95
West	
B3	23.95
C6	24.45
U1	23.95
B3	24.70
South	
A8	23.95
A7	23.95
C16	23.95
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	30.00
C21	21.15
J3, L2	30.00
C2	23.025
M9, W10, T11, S8	31.00
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	27.25
Midwest	
B5, W10, Y1, W8, R3	31.00
C2	24.675
B1	19.80
L2	30.75
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	31.25
West	
B5	31.20
B5	34.90
R3	30.45-33.40
South	
B5	32.85
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R3, R5, K3	24.85
Midwest	
A7, U1	26.10
I3, R3, C10, W8	24.85
I4	24.85
J3	26.10
West	
B3	26.10
B5	18.50
C6	26.60
U1	26.10
B3	27.10
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	35.20
R3, N1, C2	33.75
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.75
T11, S8	34.85
C10	30.60
Midwest	
B5, R3, C10	34.85
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	34.65
B5	35.10
West	
R3	34.55-36.60
B5	35.20
B5	38.25
South	
S16	28.075
C16	28.00
B5	36.75

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	21.70
Midwest	
A7, B3, G3, R3, G2, S1	21.70
I3, U1, W5, I4, W5	21.70
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	23.50
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	31.30
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	27.10
U1	27.70
A11	22.15
Midwest	
A7, R3	22.85
N4, W7	27.40
J3	25.95
K2	24.20
South	
U1	29.70
A8	22.85
West	
C6	24.95

STEEL PRICES

Producer Key
With Principal Offices

A4 American Cladmetals Co., Carnegie, Pa.
A7 Armco Inc., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A11 Atlantic Wire Co., Branford, Conn.

B1 Baron Drawn Steel Corp., Toledo, Ohio
B3 Bethlehem Steel Corp., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin Steel Co., Harvey, Ill.

C1 Calstrip Corp., Los Angeles
C2 Central States Precision Steel Co., Wichita, Kansas
C6 CF&I Steel Corp., Pueblo, Colo.
C10 Copperweld Steel Co., Warren, Ohio
C11 Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Co., Birmingham, Ala.
C20 Calumet Steel Div., Chicago Heights, Ill.
C21 Cumberland Steel Co., Cumberland, Md.

D1 Detroit Strip Div., Cyclops Corp.
D2 Driver Wilber B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.

E3 Enamel Products & Plating Co., McKeesport, Pa.
E4 Elliot Bros. Steel Co., New Castle, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owensboro, Ky.
G6 Gibraltar Steel Corp., Buffalo, N. Y.
G7 Georgetown Steel Corp., Georgetown, S.C.
G8 Guterl Special Steel Corp.

H1 Hercules Drawn Steel Corp., Livonia, Mich.

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Steel Corp., Chicago

J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Consolidated Industries, Inc.
K3 Kentucky Electric Steel Co., Ashland, Kentucky
K5 Kemco Div., Foote Mineral Co., Keokuk, Iowa

L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.
L5 Litho-Strip Corp., Chicago

M1 Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2 McLouth Steel Corp., Detroit
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M8 Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
M11 Midwest Steel Div., National Steel Corp., Portage, Ind.

N1 Northeast Precision Steel Co., Boston, Mass.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle, Wash.
N9 Nelson Steel & Wire Co., Chicago, Ill.
N10 North Star Steel Co., Saint Paul, Minnesota

O2 Oregon Steel Mills, Portland, Ore.

P2 Phoenix Steel Corp., Claymont, Del.
P3 Wyckoff Steel Div., Plymouth, Mich.
P9 Pacific States Steel Co., Niles, Cal.
P13 Penn Dixie Steel Corp., Kokomo, Ind.
P14 Pacific Tube Co., Los Angeles
P15 Philadelphia Steel and Wire Corp., Phila.

R3 Republic Steel Corp., Cleveland
R4 Ramco Steel Co., Buffalo, N. Y.
R5 Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S10 Seneca Steel Service, Buffalo, N. Y.
S16 Southern Precision Steel Co., Gulfport, Miss.

T4 Thomas Steel Strip Co., Warren, O.
T5 Timken Company, Steel Division, Canton, O.
T7 Texas Steel Co., Fort Worth, Tex.
T9 Triumph Electro Corp., Chicago, Ill.
T10 Tennessee Forging Steel Corp., Harriman, Tenn.
T11 Teledyne Columbia-Summerill, Carnegie, Pa.

U1 United States Steel Corp., Pittsburgh, Pa.

W3 Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5 Wheeling-Pittsburgh Steel Corp.
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W10 Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14 Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta	26.12	33.84	35.93	33.41	31.20	22.37	44.87	44.02	53.07	59.65	66.10	77.21
Baltimore	30.74	34.88	39.08	40.50	34.15	34.23	27.74	46.62	54.73	58.26	70.10	74.23
Birmingham	26.74	31.91	35.45	31.50	30.44	32.68	22.14	44.68	40.00	54.48	53.70	77.77
Boston	30.04	34.80	41.18	40.89	36.21	31.46	31.63	47.19	56.85	58.54	65.48	72.08
Buffalo	28.55	32.85	37.75	37.94	34.62	31.41	22.46	42.21	53.31	52.82	60.54	66.87
Chicago	26.59	30.53	33.71	32.92	29.31	29.40	19.52	41.73	46.88	52.39	59.35	64.80
Cincinnati	24.54	28.98	31.90	31.52	30.62	29.64	19.41	40.35	44.15	51.15	54.64	62.06
Cleveland	25.95	27.61	39.04	33.11	30.90	30.84	20.74	41.19	45.10	50.57	57.50	63.44
Denver	33.21	37.27	36.80	41.99	35.67	35.38	24.43	48.13	55.94	66.04	69.72	77.41
Detroit	24.58	28.30	31.83	31.54	29.67	28.87	17.94	40.05	44.00	49.40	55.87	61.79
Houston	33.08	34.23	38.17	43.39	33.60	36.36	23.53	51.92	57.32	63.99	67.04	78.17
Kansas City	27.69	32.18	35.42	34.10	31.17	30.58	23.08	43.25	49.48	55.55	58.45	69.50
Los Angeles	30.09	36.92	38.04	45.58	40.37	39.37	37.15	51.49	62.41	72.74	79.32	87.29
Memphis	25.23	30.89	34.49	27.87	26.45	26.74	23.80	42.81	54.16	59.74	65.11	74.44
Milwaukee	27.03	29.11	31.65	31.24	28.43	29.12	18.98	40.03	43.66	44.40	54.02	60.75
New York	30.05	34.12	39.11	44.95	30.29	28.69	24.39	48.37	53.84	59.20	68.70	74.84
Philadelphia	33.05	35.11	40.13	43.57	35.06	35.45	26.65	48.35	55.04	58.22	70.36	75.68
Pittsburgh	29.64	36.60	41.51	39.01	34.88	35.48	24.98	44.85	58.00	63.94	63.60	71.30
Portland	27.31	34.20	38.83	37.86	31.97	36.20	53.64	50.70	52.94	59.12	58.00	....
San Francisco	29.95	36.45	39.22	46.17	38.96	37.05	29.00	50.92	64.49	20.60	77.50	85.00
Seattle	28.40	34.44	36.36	43.03	32.29	38.79	37.40	53.16	64.68	71.30	76.09	86.33
Spokane	21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis	27.36	32.89	35.91	36.73	30.34	29.67	22.42	42.20	44.87	51.31	57.73	64.30
St. Paul	26.32	34.07	34.40	32.90	30.42	29.65	18.77	42.73	44.84	51.60	58.42	64.64

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 38 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2¹⁵⁄₁₆; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

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PUBLICATION HAVE BEEN FILMED

Cover 1, p. 3, 41, 43, 45,

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GUST 12, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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SOLVING THE ENGINEERING PROBLEMS OF TOMORROW'S AIRCRAFT

WHEN THINGS GO WRONG

PART I: TROUBLE & TURNAROUNDS

WHAT THE AIR FORCE IS DOING TO ATTACK PRODUCTIVITY

INSURANCE TAKES THE STING OUT OF OVERSEAS BUSINESS RISKS

VOL. 224, NO. 23

IRON AGE

AUGUST 12, 1981

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Back in the aircraft factories is one of the most vigorous demonstrations of materials and manufacturing R&D. Much of the activity centers on weight trimming to hype performance, for military survival and to reduce fuel consumption.

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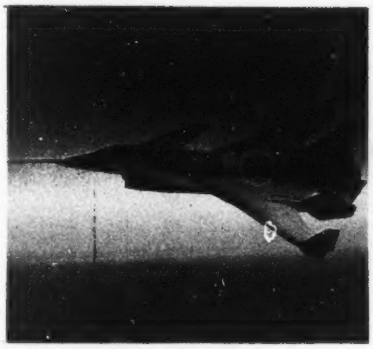

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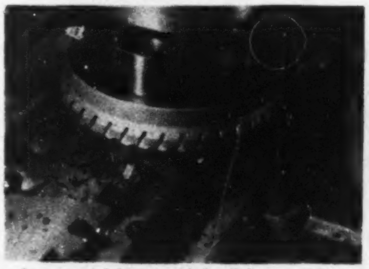

Are machine tool builders cutting it with industry?

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

STEEL TURNS A CORNER; NONFERROUS DROPS BACK

With shipments rising, steel's bottom lines show healthy profitability. Dwindling exports and high interest rates squeeze aluminum's earnings.

By George J. McManus and Robert J. Regan

Steel

There's nothing wrong with the steel industry that a little volume won't cure.

The importance of volume was shown in the second quarter when industry shipments were up 20 pct from the second quarter of 1980.

This rise produced a 387 pct jump in the earnings of Republic Steel Corp. National Steel Corp. had a 476 pct advance. Interlake, Inc. was up 121 pct.

These and other increases reflected comparisons of a fair 1981 quarter with a very bad 1980 period. The steel industry shipped at an annual rate of less than 80 million tons in the second three months of 1980. On actual steel operations, many mills just about broke even.

Shipments in the second quarter of 1981 were at an annual rate of 96 million tons. That was up only 8 pct from 1980, but as has been noted, individual earnings were up as much as 500 pct.

Profit margins of major mills were respectable in the second quarter. Armco, Inc. earned nearly 5 pct on sales in the quarter and 14.8 pct on equity in the whole first half.

United States Steel Corp. earned 4.4 pct on sales. U. S. Steel's earnings were up 50 pct from the second quarter of 1980.

The $126 million earned by LTV Corp. in the second quarter came to 6.4 pct of sales. Jones & Laughlin Steel Corp. had an operating profit of $111.3 million in the quarter. Continental Emsco Co., which used to be part of the steel group, had an operating profit of $55.7 million.

Kaiser Steel Corp., which lost money in the second quarter of 1980, earned 7.3 pct on sales in the 1981 quarter. CF&I Steel Corp. had a 5.5 pct return on sales and Copperweld Corp. earned 6.2 pct.

Margins of the integrated mills would have been better had it not been for the coal strike. This dragged on into July. For Armco, the strike added $10 million in abnormal costs.

In addition, revenues were affected

Steel: A Little Volume Helps Profits

Millions of Dollars

		Earnings					
	E/S	2nd Q '81	2nd Q '80	Pct Change	2nd Q '81	2nd Q '80	Pct Change
USS	4.4%	167.60	111.50	+50	3,792.00	3,149.30	+20
Bethlehem	4.0%	77.60	43.10	+80	1,946.60	1,642.10	+19
Armco	4.9%	85.50	59.80	+43	1,733.60	1,374.70	+26
National	1.7%	19.00	3.30	+476	1,106.06	861.20	+28
Republic	3.6%	43.10	8.80	+390	1,190.00	893.80	+33
Inland	2.8%	29.50	(22.45)	—	1,043.46	748.22	+39
LTV	6.4%	126.00	37.10	+240	1,974.70	1,389.40	+42
Total	4.3%	548.30	241.15	+127	12,786.42	10,058.72	+27
Wheel.-Pgh.	2.2%	7.11	1.34	+431	326.09	252.00	+29
Kaiser	7.3%	22.13	14.00	+58	301.60	214.53	+41
Cyclops	2.8%	7.70	6.00	+28	275.38	244.17	+13
Interlake	4.7%	12.43	5.63	+121	267.23	277.74	−3.8
CF&I	5.5%	10.58	3.43	+208	193.02	152.72	+26
Copperweld	6.2%	10.03	2.55	+293	161.35	119.15	+35
Lukens	4.3%	4.37	0.98	+346	101.35	87.45	+16
Eastmet	0.6%	0.47	3.27	−86	81.68	77.52	+5.4
Laclede	3.2%	2.21	(1.48)	—	69.73	51.83	+35
Phoenix	2.0%	1.05	0.30	+250	52.78	43.12	+22
Florida	7.1%	0.06	0.05	+0.2	0.83	0.72	+18

Parenthesis indicates loss

Nonferrous: Rough on Aluminum

Millions of Dollars

	Earnings			Sales and Other Revenues		
	2nd Q '81	2nd Q '80	Pct Change	2nd Q '81	2nd Q '80	Pct Change
Alcan	$89.0	$137.0	−35.0	$1,338.0	$1,319.0	+1.4
Alcoa	81.5	148.8	−45.2	1,317.0	1,308.0	+0.7
Brush Wellman	5.6	4.8	+16.7	50.1	46.8	+7.1
Engelhard	15.4	16.7	−7.8	433.3	613.4	−29.4
Freeport-McMoran	43.3	42.6	+1.6	208.2	156.0	+33.5
Inco	42.8	46.1	−7.2	792.0	720.0	+10.0
Kaiser	68.5	82.2	−16.7	921.8	1,028.5	−10.4
Martin Marietta	61.1	58.8	+3.9	880.2	643.8	+36.7
Newmont	117.1	50.5	+131.9	——	——	——
Olin	32.9	27.2	+21.0	548.9	491.3	+11.7
Oremet	9.2	6.7	+37.3	30.4	27.5	+10.5
Phelps Dodge	25.4	24.7	+2.8	383.3	376.2	+1.9
Reynolds	45.3	58.1	−22.0	950.2	957.1	−0.7
St. Joe	23.3	24.7	−5.7	193.2	339.4	−43.1
Texasgulf	57.6	59.1	−2.5	278.3	240.6	+15.7

Newmont: Includes nonrecurring gain of $100.7 million on investment. St. Joe: Results for 1980 period include 100 pct of coal segment; results for the 1981 period include 50 pct consolidation of coal segment reflecting Nov. 1980 formation of a joint venture.

by price weakness. "Steelmaking profit margins were squeezed by competitive pressures, price discounting, and increasingly bold initiatives by foreign steel producers," said H. M. Love, chairman of National Steel Corp.

Steel volume was not really great in the second quarter. Given a normal economy, the steel industry should be shipping about 100 million tons a year and about 26 million tons in the peak second quarter.

"High interest rates and the sluggish domestic economy continued to dampen consumer demand for cars and homes in the second quarter," said Mr. Love.

There is certainly the potential for much better volume in the future. "The economy should begin to pick up its pace again in the fourth quarter," said Harry Holiday, chief executive of Armco. Mr. Holiday looks for interest rates to fall and the rate of inflation to slow.

"By the end of this year," he continued, "President Reagan's measures to reduce the Federal budget deficit will be taking effect and cuts in Federal taxes should have passed the Congress. Together, these actions will stimulate growth in the years ahead."

The oil country market is already in the growth mode. The strength of Armco's National Supply business is "unprecedented."

In other markets, the immediate outlook is less rosy. "Lagging car sales and stagnant homebuilding indicate weak demand and low profit levels extending through the third quarter," says D. J. Carney, chairman of Wheeling-Pittsburgh Steel Corp.

Despite its heavy reliance on sheet products and the auto market, Wheeling-Pittsburgh had a surprisingly good second quarter. Earnings of $7.1 million were up from $1.3 million in the second quarter of 1980.

Steel shipments aren't collapsing, but they will fall by about 3 million tons in the third quarter. The decline will hurt productivity and put added pressure on prices. At the same time, steel wages went up 20¢ an hour on Aug. 1 and cost of living payments added another 21¢.

Nonferrous

Faltering auto production and housing starts took their toll on second quarter results of leading nonferrous metals producers, with high interest rates aggravating things for producers, fabricators and consumers alike.

The aluminum producers were hit the hardest, in part because of the absence of export business and a broad retreat in free market aluminum prices.

Copper prices also were lower in the second quarter of 1981. Lead and zinc were doing well, at least in the pricing department, compared with the similar 1980 period.

Inco Ltd.'s copper and nickel shipments were higher in the period, but copper prices were depressed and there was an official discount on nickel prices during most of the quarter. Inco said flatly toward the end of July that markets for its primary metals and alloy products "are currently depressed and it now appears that a recovery will be delayed into 1982. As a result, lower earnings are expected in the remaining quarters of this year."

North America's four aluminum giants, Alcoa, Alcan, Reynolds and Kaiser Aluminum, sustained a decline of $141.8 million, or 33.3 pct, in aggregate second quarter profits to $284.3 million. Sales and other revenues were down only $85.6 million, or 1.9 pct, and shipments were down 3 pct, or 45,429 tons, to a total of 1.467 million short tons.

Alcoa Chairman W. H. Krome

George said the company's aluminum shipments held up well compared with the first quarter of 1981 and prices improved on most products. "Unfortunately," he added, "costs increased even faster—although the rate of increase is moderating."

Mr. George said the company anticipates lower shipments in the second half and has reduced production accordingly.

Alcan said profit margins contracted during the first half because of an inability to offset rising costs with product price increases, particularly on the European market. The company said second half prospects are discouraging because aluminum production worldwide continues to exceed consumption "and prices remain soft."

Reynolds Metals Chairman David P. Reynolds observed that the nation's economy "is recovering at a slower pace than many expected and there continues to be weakness in several key markets, including construction, automotive, cans and foreign markets."

Cornell C. Maier, chairman of Kaiser Aluminum & Chemical Corp., said export business, which was an important factor in the company's 1980 results, was well below last year's levels while domestic business was at a lackluster pace.

"Under these circumstances, the price improvement we have been able to achieve has been well below rates at which our costs have risen in areas like labor and energy," he said.

Kaiser's mid-May price hike on primary ingot to 80¢ a lb drew no support from other aluminum producers. Free market prices during the early part of the third quarter were as much as 25¢ a lb under Kaiser's published price.

U.S. primary aluminum production ran at a record pace during the first half of 1981, but the third quarter total will be lower because of curbs by several producers.

Phelps Dodge held its second quarter and first half copper production down by 9 pct from the corresponding 1980 periods. The company's copper sales were up 8 pct for the second quarter and first half of this year, but copper prices were lower. While net from the copper-producing sector was down, the company's fabricating results showed substantial improvement in the second quarter of this year.

Phelps Dodge drew $2.6 million in pre-tax interest income on the unpaid balance due from Alusuisse. Phelps Dodge sold its 40 pct interest in Consolidated Aluminum Corp. to Alusuisse last December.

In the second quarter of last year, Phelps Dodge's share of the aluminum unit's earnings were slightly better than break-even because of $4.2 million in nonrecurring expenses relating to an accident which cut off the gas supply to the smelter.

Olin Corp.'s brass division reported a record quarter and operated close to capacity.

Newmont's big 131.9 pct gain in second quarter profits reflected a $100.7 million gain on the sale of most of its 7.3 pct holding of St. Joe Minerals Corp. stock to Fluor Corp.

St. Joe Chairman John C. Duncan said the company's second half results showed substantial improvement over the first six months of the year, when results were affected adversely by strikes at the company's lead and coal operations. ☐

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TALKING BUSINESS

"We both have recognized that the future growth of Ajax rests with our ability to work together . . ."

Resolving a contract dispute is often a difficult enough task. Reaching an agreement that puts a lid on the cost-of-living allowance (COLA) and ties it to a plant's productivity and profitability might seem like a rare achievement. Rare as it may be, such was the case at the Ajax Magnethermic Corp. plant in Warren, Ohio, earlier this year.

"When I first came to Ajax Magnethermic last year, it was them and us. There was a great deal of bitterness from a strike in 1978," says Norman C. Harbert, president and CEO of Ajax Magnethermic Corp. "I know plant people, and I felt confident we could survive in Warren and grow.

"But we had to have a contract and we had to have a cap on COLA. We told the union here we couldn't live with the formula as it was. Yes, we would have pulled out, closed the doors."

Mr. Harbert and John J. Ughrin, Jr., president of the United Steel Workers of America Local 5939, announced recently that an agreement was reached on a new three year contract, they were also announcing a breakthrough in modern labor relations.

What was the solution? The workers agreed to a cap on COLA, but also a minimum. Mr. Harbert tied the workers' interests to his own by explaining what simply had to be in terms of labor costs, but with incentives. "Interestingly enough," he notes, "the union leader suggested this. With this settlement, Warren will never disappear in the Ajax Magnethermic team."

"By this agreement," Mr. Harbert adds, "the company and the union have taken a great stride forward into the 1980s. We both have recognized that the future growth of Ajax rests with our ability to work together for the achievement of mutual goals."

Cost cutting is a big subject with Mr. Harbert. It's a key point in his growth plan for Ajax Magnethermic. "I've insisted that on every major order, $100,000 or more, we take a team approach. We want engineers and shop people all involved to do the job right, especially in terms of costs," he says.

"My predecessor embodied everything that represents the classic entrepreneur. When John Logan started this company with little more than an idea, he took the risk that is rare, anywhere at any time, in business. I admire that," Mr. Harbert comments.

"Filling the shoes of the likes of John Logan is never an easy job. But in all candor, the transition in leadership at Ajax went extremely well, mainly because of the wealth of talent he had built into the organization."

Mr. Harbert's goal for Ajax Magnethermic? "To grow the business through more aggressive market penetration and by dramatically expanding internationally. We will also move into the service area which is counter cyclical to our main lines. This company is about the same size as Reliance was when I joined it in 1956," he adds.

NUCLEAR INDUSTRY RECHARGED FOR A NEW WAVE OF GROWTH

Reagan Administration's support of nuclear power has generated optimism in the industry.

By Robert E. Harvey

Even before Three Mile Island the nuclear industry had been ailing—battered by anti-nuclear outcries and mounting costs, and buried under Federal red tape.

The fallout from TMI, however, appeared to be the killing blow. Plant licensing ground to a halt and public outcries grew deafening. Uncompleted plants were in many instances either closing their doors doors or going into a holding pattern. Last year, for example, 16 reactor projects were cancelled—the largest yearly number ever recorded.

That was last year, however. This year, industry officials are confident that a long awaited recovery for the industry is at hand. The optimism stems largely from strong pro-nuclear posture taken by the Reagan Administration.

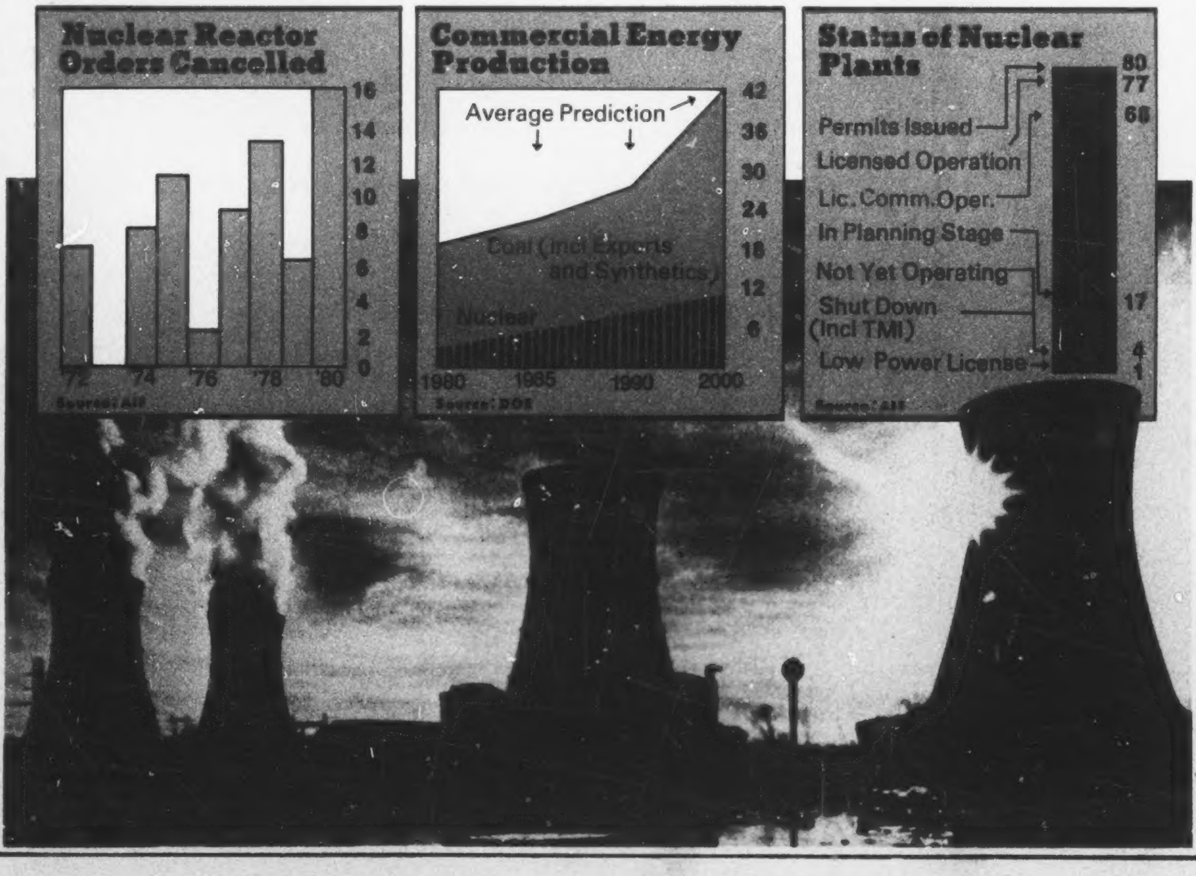
According to the National Energy Policy Plan issued recently by the Department of Energy (DOE): "The Administration is committed to reversing past Federal government excess and to providing a more favorable climate for efficient energy production, thus allowing nuclear power to compete fairly in the marketplace with other potential sources of energy."

Although some industry officials would like to see some specific government programs, many are pleased simply by what they see as a fundamental change in the government's attitude toward nuclear power.

Nevertheless, the Federal government is contemplating several steps aimed at making the industry more competitive. Tops on its list is the waste disposal problem.

According to a DOE spokesman, "The program to find a terminal storage medium has been going on for four years, but under the present Administration the budget has been increased as well as the timetable for all the signposts leading to permanent waste disposal, including developing the proper medium, finding a specific site and drilling a hole."

Utilities officials believe that waste disposal should receive top priority. "One thing that the Administration is committed to and is absolutely necessary if the industry is to continue to operate and expand is closing the back end of the fuel cycle," says an official with Wisconsin Electric. "Plans to open a waste facility have been on the drawing boards for years, but schedules kept being extended while the problem was studied to



Source: AIF

Source: DOE

Source: AIF

death."

The other big problem the Administration will tackle is the inefficiencies in the licensing procedures for nuclear facilities. Some of the licensing steps produce unnecessary delays and force utilities to spend almost 14 years bringing a new facility on stream.

"The bottom line is getting the plants that are either constructed and waiting for operating licenses or nearing completion on stream," adds the Wisconsin Electric official. "The Reagan Administration and the National Regulatory Commission appear to be working hard on this problem. We have a lot of plants that are ready to go but are not operating because the licensing process is not finished.

"The big event that caused many nuclear cancellations and deferrals was the Three Mile Island review, which put about an 18 month hold on licensing review, so things got stacked up. Also, the nature of the licensing process itself is conducive to slowdowns. It is extremely easy to slow the process down and very difficult to speed it up."

The utilities officials insist they don't want the licensing process to ease up on stiff safety requirements; they only want it streamlined. "Nuclear regulations have gotten stricter and we don't quarrel with that," explains James Toscas, Nuclear Information Specialist with Commonwealth Edison of Illinois. "But once we have met the regulations, we don't want to go through these endless hearings and delays, answering the same questions over and over again. By streamlining the process, the Administration will be helping reduce the time it takes to go from the commitment to nuclear to the actual operating facility."

Specifically, the Reagan Administration wants to make the licensing of a nuclear plant take about six years—the same time it takes to put a coal facility on line.

"It is wise to give coal and nuclear plants equal time," says Mr. Toscas, "because then the decision of whether to go coal or nuclear can be determined by the merits of the processes rather than by timetables set by the government."

Most of the government energy policies, such as balancing the timetables between coal and nuclear are being made with an eye toward fostering competition and removing the government from the energy arena.

Assuming that the industry's optimism is justified there is still the real question of how much the nuclear industry can grow, even when it has everything going for it. Industry construction probably will remain depressed for several years no matter what the Reagan Administration does. Plants already under construction will probably be completed with fewer delays and there may be fewer cancellations, but the prospect of new plants (with the exception of the Southwest) is rather dim.

"What is happening with the power industry now is that you have an economic situation that is driving them up the wall," explains Don Winston with the Atomic Industrial Forum. "It is almost as hard today to build a coal plant as it is to build a nuclear facility. For one thing, you have to borrow money that is now running at about 20 pct prime, and for another, you are dealing with billions of dollars. When you deal with billions on something that is going to take 8 to 14 years to build, a 20 pct interest rate is disastrous. There is just no way you can borrow that money and that is one of the reasons there has been no new starts in either coal or nuclear."

Despite the problems, many manufacturers are optimistic about nuclear's long-range growth potential.

On the other side of the coin the growth rate for fuel consumption has gone from an average of 7 pct a year before the oil embargo to 3 pct during the past few years. Many utilities now have surplus energy. As a result, construction timetables of all types of power facilities have been stretched out. An energy crunch could come in the early 1990s, say several industry spokesmen, which means decisions for new plants should come fairly soon.

However, with the current high interest rates, companies are attempting to put off the decision to build as long as possible. Ironically, if the timetable needed to put up a nuclear unit is reduced, the utilities can wait longer before making their decision to build.

Thus, fewer nuclear plants over the next few years and little work for builders.

"We are a small steel fabricator and we have been doing a lot of miscellaneous and embedded work over the past 15 years," says A. J. Rudis, Jr., president of Rockwell Engineering Co. Inc. "I'm pessimistic for a number of reasons. About three years ago, just before Three Mile Island, we negotiated a contract with Public Service of Oklahoma for their Black Fox nuclear plant. With TMI all activity ground to a halt. PSO had their limited work authorization for site preparation, but they did not have their construction permit. What has evolved since then is that they keep four people on the payroll and they remain eternally optimistic. But they are just going through the motions and it looks like they may never get that permit. On top of that," he explained, "people are conserving like crazy." Despite the problems, many manufacturers are optimistic about nuclear's long range growth potential.

"In general, President Reagan has fostered a climate conducive to increased economic development and with increased development will come the need for more energy," says Carlo Caso, manager of strategic resources, Westinghouse Electric Corp. "We have seen the reduction in the use of energy since the oil embargo. However, electricity has done much better than other forms of energy since that period because of lower price increases. In the future electricity will continue to lag behind other energy prices."

And when looking at the cost differential between nuclear and coal-generated electricity, nuclear continues to hold a significant edge.

"A nuclear kilowatt hour costs an average of 1.9 cents to produce compared to 2.3 cents for coal," explains Mr. Winston of the Atomic Industrial Forum. "That figure was obtained from members who use both coal and nuclear energy. The price of oil was rated at 4.3 cents a kilowatt hour. Oil is rapidly being phased out and the field is now largely between coal and nuclear."

When more electrical capacity is needed in the U.S., nuclear should be in a very competitive position. The only dark cloud appears to be a possible lack of popular support. If the public comes out strongly against nuclear growth, few new plants will be erected. However, with the Administration taking the initiative, industry officials predict an increasing acceptance of nuclear.

One place where nuclear plants can be sold right now is overseas and again the Reagan Administration appears to be opening doors closed by former President Jimmy Carter. ☐

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SOLVING THE ENGINEERING PROBLEMS OF TOMORROW'S AIRCRAFT INDUSTRY

Back in the aircraft factories is one of the most vigorous demonstrations of materials and manufacturing R&D seen in many a moon.

By Charles T. Post

Reports from the biennial Paris Air Show in June generally reported "nothing new" in military aircraft. With the exception of the F/A-18, which was appearing at Paris for the first time, most of the military planes, or their forebears had been seen before.

The paucity of new planes partially is accounted for by the fact that governments, like airlines, simply run out of money with which to develop new planes.

This surface calm is deceptive. Back in the aircraft factories is one of the most vigorous demonstrations of materials research and manufacturing R & D seen in many a moon. It could affect tomorrow's planes dramatically.

Most of this activity results, in one way or another, from the necessity to trim weight. On military planes, performance and military survival is the goal. On commercial planes, it's reduced fuel consumption for economic survival.

"This is an exciting time for materials technology in aircraft design and manufacturing," says J. Corey McMillan, manager, materials technology, Boeing Commercial Airplane Co. "We are probably making more improvements in materials and processes than at any time in the past. These will be more significant."

Some of the more promising developments are outlined below.

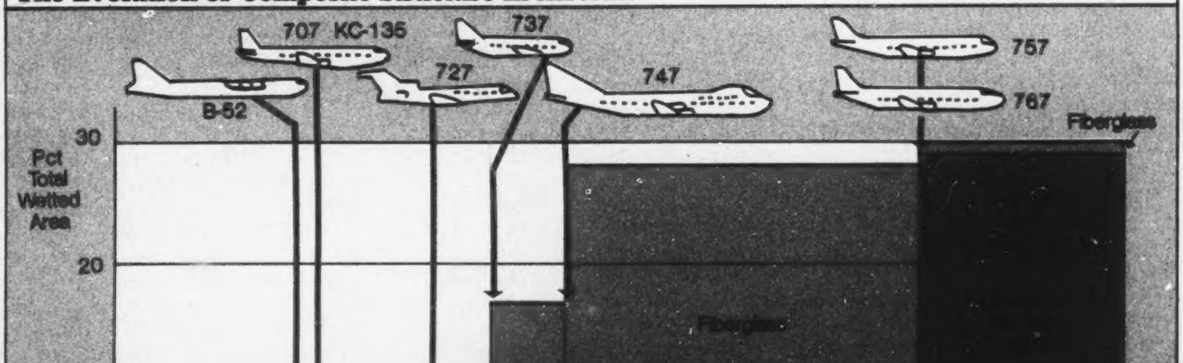
Manufacturing

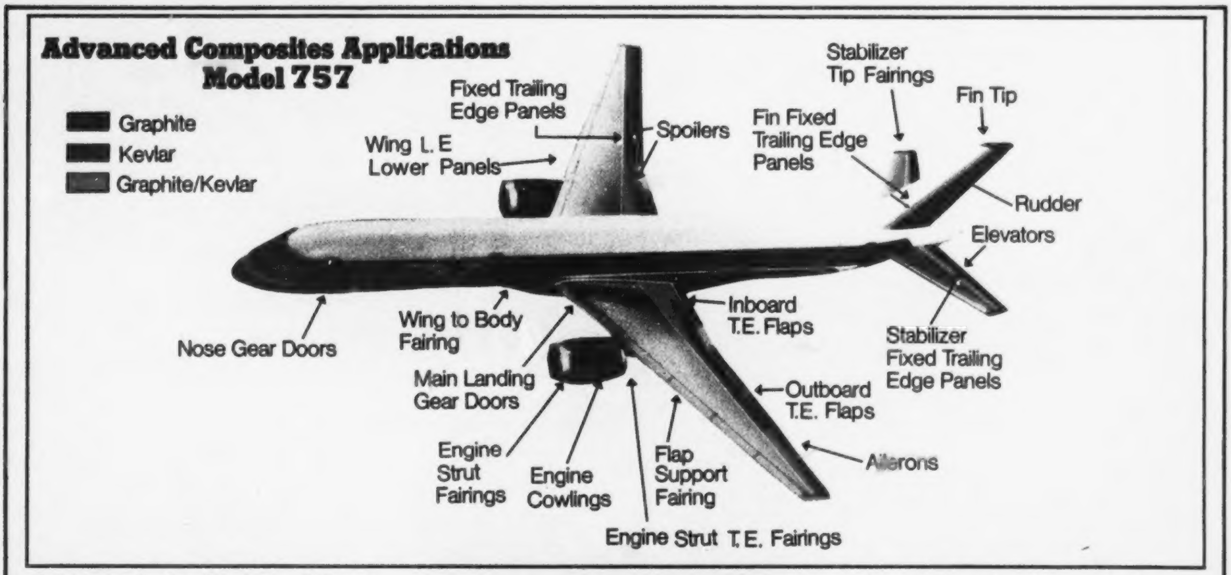
Composites. No longer is it a question as to whether composites will hold a major place in aircraft manufacturing. It is simply a question as to how long it will take. In the meantime, old-hand metalworking men will have to learn some new methods and new terms. The teaching language will not necessarily be English.

Virtually all of the composite parts for Boeing's new 767 wide-body planes are being made by Fuji in Japan and Aeritalia in Italy. Fuji is making landing gear doors and similar parts, while Aeritalia is making the control surfaces and the rudder. Corresponding components for the 757 are mostly being made in-house in the U.S. Some parts, such as the fairings, are being sub-contracted to other U.S. suppliers.

Boeing is regarded in the composite fraternity as being a leading exponent of the use of woven broadgoods versus unidirectional tape prepregs. This derives from Boeing's basic experience with fiberglass, in which broadgoods were used almost exclusively. As the company moved towards composites, the use of broadgoods continued.

The Evolution of Composite Structure in Aircraft




Advanced Composites Applications
Model 757
Graphite
Kevlar
Graphite/Kevlar
Fixed Trailing Edge Panels
Wing L. E Lower Panels
Spoilers
Stabilizer Tip Fairings
Fin Tip
Fin Fixed Trailing Edge Panels
Rudder
Elevators
Nose Gear Doors
Wing to Body Fairing
Main Landing Gear Doors
Inboard T.E. Flaps
Stabilizer Fixed Trailing Edge Panels
Outboard T.E. Flaps
Ailerons
Engine Strut Fairings
Engine Cowlings
Flap Support Fairing
Engine Strut T.E. Fairings

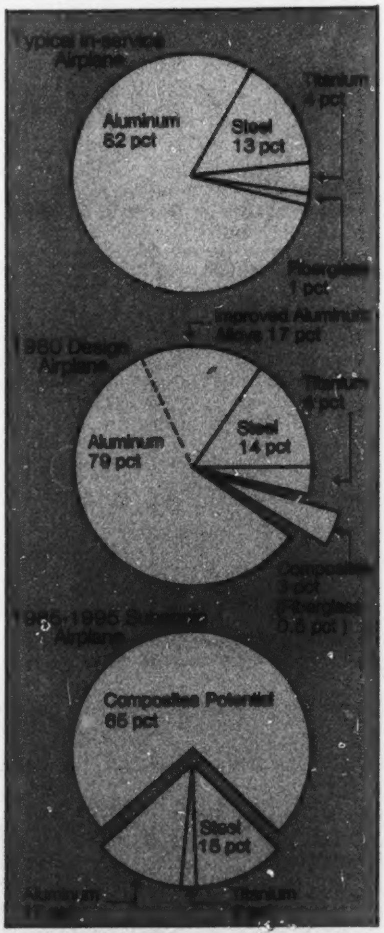
Components for Boeing's 757 are mostly made in-house in the U.S. Some parts like fairings are being subcontracted to other U.S. suppliers.

"We still see economies in broadgoods, particularly in the use of less hand labor," declares A. T. Taylor, manager, manufacturing R & D, Boeing Commercial Airplane Co. "As we introduce more automation into the manufacture of advanced composite components, we tend towards tape. Tape is more amenable to automation. You can optimize material usage through the use of tape."

Boeing's experience with tape laydown equipment goes back over 10 years, but the company still believes there are bugs to be worked out. Currently, it is evaluating various systems.

Boeing uses neither water jet, laser, nor automatic knife for cutting prepreg parts. Again harking to its fiberglass experience, manual cutting is used. After cutting, parts are packed in kits and stored for eventual use. Automated cutting is being studied, particularly a mechanical knife system. The next acquisition, probably in conjunction with an intermediate pattern-making step, may well be a computerized "nesting" program. "Nesting" represents a potentially greater saving than cutting because of the cost of material involved.

Mechanization of composite parts manufacture for aircraft has been slow to evolve simply because production rates have been low. The experience span of General Dynamics Corp., both in units produced and production rate, is among the industry's largest. The F-16, which General Dynamics produces at the rate of 40 per month, has nearly 300 lbs of composites in its structure. The largest concentration is in skins for vertical and horizontal stabilizers.



Commercial aircraft design for the 1985-1995 generation could include as much as 65 pct composites by weight, Boeing engineers suggest. This compares with 1 pct fiber glass on the in-service 747 and 3 pct on the new generation 747 and 757. The surface coverage of the 747, 757, and 767 is about 30 pct composites, however.

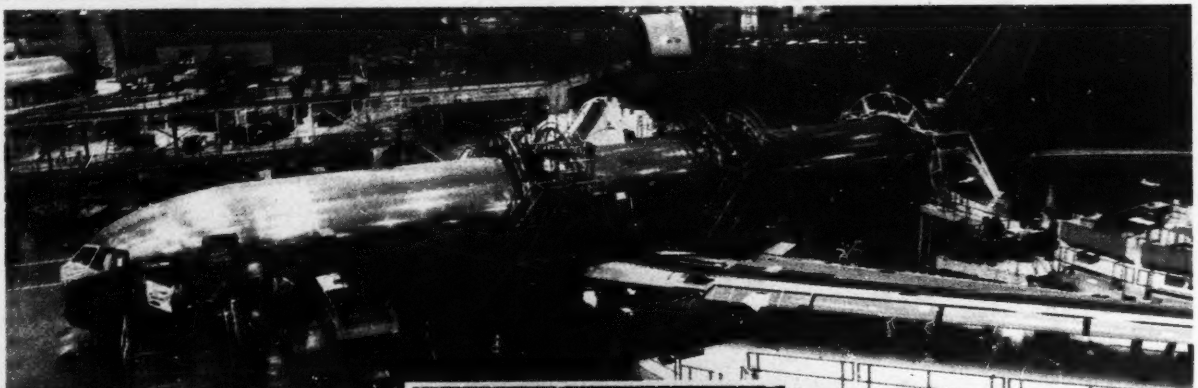
General Dynamics is an exponent of automated pre-preg tape layup as compared to Boeing and Northrop, for instance, which use either tape or woven broadgoods, depending on the part. After building and testing two small tape laying machines, General Dynamics has acquired an automated tape layer built by Ingersoll Milling Machine Co.

Specs called for an NC machine which would lay-up 6-in. wide graphite epoxy tape along any angle orientation. As described by Grant Davis, General Dynamics' supervisor of nonmetals technology development, the unit comprises "a flat, stationary bed on which to lay the plies of tape; a movable two-column gantry providing 3-ft x-axis motion; a saddle mounted on the gantry for 10-ft y-axis motion; plus 6 in. of z-axis saddle ram travel.

To lay the tape, a rotating dispensing head is mounted on the saddle. It consists primarily of the tape roll and drive, a backing paper windup spool and drive, a rotating guillotine-type shear for cutting the tape, and a roller for pressing tape.

Three additional NC axes are involved in the head: c-axis for head rotation, d-axis for shear rotation, and u-axis for tape positioning."

General Dynamics says that, with the Ingersoll machine, it can lay up 12 lbs per manhour on the F-16 vertical stabilizer with only about 5 pct waste. In comparison, General Dynamics claims that the fastest rate reported for broadgoods layup systems is 5 lbs per manhour with about 20 pct materials waste.



Boeing's 767/757 manufacturing and materials technology will lead the way for commercial aircraft builders into this decade.

In contrast, Northrop has built, under Air Force sponsorship, a much more elaborate demonstration facility. About 75 pct of Northrop's prepreg usage is 48-in. unidirectional tape from spools, the balance being woven broadgoods. All patterns are cut with a Gerber reciprocating knife. When the production rate warrants, multiple plies will be cut automatically. Ply layout for cutting, or "nesting," will be computer controlled.

Northrop is working on the development of a Cincinnati Milacron robot which will discretely pick up single plies and deposit them in the curing tool in the proper sequence.

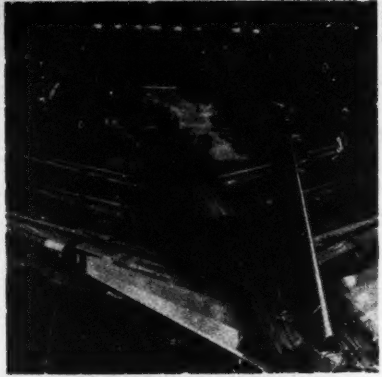
J. D. Howell, manager of Northrop's advanced composites center, correctly points out that automation is design dependent.

"When engineers design a structure, they must have in mind that it's for automated manufacturing. The F/A-18 and other current generation planes were designed several years ago, so we're going to be trapped with a lot of hand labor, at least for the near term."

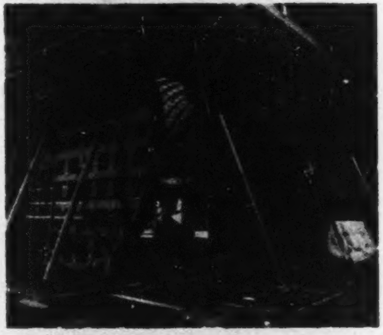
Ronald S. Petersen, director of operations, Lockheed Corp., also sees computer controls as a major area of composites manufacturing development.

"We're looking for more programmable autoclaves, more programmable hot presses that will give us detail parts, and feedback mechanisms within the structure, itself. As the composite is being made, it will 'talk' to us and tell us what pressure and heat it needs," Mr. Petersen says.

As in any developing system, he sees the need for standardization in composite systems and processes.



Assembly bay for Boeing 767 contains assembly jigs for forward fuselage (far right), wing panels (top center), and fuselage section (left).



Boeing 767 fuselage section is pressurized 62,000 times to 1,238 pounds per square foot.

A wing-spar cord and web for a Boeing 767 are mounted in an automatic wing-spar assembly tool.

Lockheed uses both broadgoods and tape. The Trident program is mostly broadgoods. Aircraft is mostly tape up to 12-in. wide. Some mechanization has taken place, but no major innovations, such as robots.

Robots have not yet proved their worth in the composite production process, agrees Dr. Leslie M. Lachman, Rockwell North American International's technical director, research and technology, structures and materials. "It's still not clear that robots are the answer," he says.

McDonnell Douglas, to the contrary, is reported working with robots to pick up materials and position them in the tool. This operation uses both 12-in. tape and 42-in. woven broadgoods.

One composite manufacturing process—pultrusion—which has been languishing for some time may stage a comeback at Boeing. The most common form of pultrusion involves continuously pulling pre-preg tape through a shaped die and an in-line microwave curing chamber. Die materials, die design and resin control were nagging development problems which now appear to have been licked. An overhead secondary structural support beam on the 767 may well be the first in-flight application.

"Pultrusion has the economies," Boeing's Mr. Taylor says. "The problem is that designs do not seem to call for the types of constant sections where it can be applied."

Future research may involve a partial preliminary cure. This would allow a secondary forming operation, followed by final cure.

Major economies in the assembly of composite resin parts undoubtedly lie in increased use of co-curing. This consists essentially of assembling uncured parts in a tool, bagging, and curing in an autoclave. Under heat and pressure, the specially selected resin serves as an adhesive to bond the parts.

The lengthy alternative is curing

unassembled bagged parts in an autoclave, removing them, assembling them, applying an adhesive, and curing the bond in the autoclave. This is known as a two-stage cure. There are, of course, variations.

McDonnell Douglas used an innovative method in assembling and curing parts of 14 DC-10 rudders in a NASA program. The rudders, incidentally, have logged 150,000 hours of in-service flight on commercial airlines.

The graphite-epoxy rudders consist of 31 ribs, leading edge spar, and trailing edge spar. After application of some heat—"densifying" or "B-stage curing"—the parts are assembled in a self-contained fixture. In what Douglas calls a "trapped rubber" process, a special silicone rubber formulation is cast along a face bar to match the joints of the spars and sine wave ribs.

Electric heaters within each of the 31 mandrels separating the ribs provide a controllable heat source within the tool. As heat is applied, the rubber expands, providing pressure. The rubber also provides low cost and accurate tooling. Currently an oven heats the outside of the tool. When the tool goes on the assembly line a built-in shroud or heater jacket probably will be used.

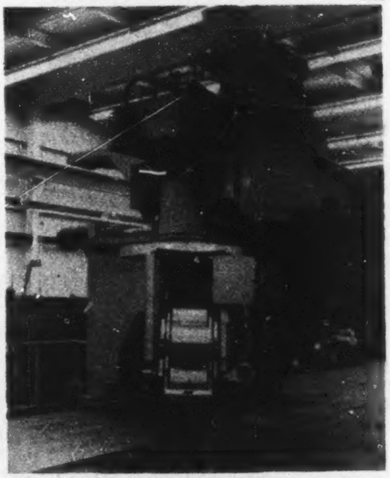
A second assembly fixture is used to join the laid up and cured skins to the substructure. In the fixture, these skins are drilled and matched to the substructure using drill plates. Then the skins are removed, nut plates are attached to the substructure, and the skins are bolted on. Thus, ready access is provided for inspection, an important feature in maintenance.

This Douglas process is representative of the strides which are being made in introducing simplified, labor saving manufacturing methods to composite parts. Reduction or elimination of use of the autoclave is a natural target.

Boeing's transition from the 747 to the 767 and 757 was equally a manufacturing transition from fiberglass to composites. Much of the early tooling was based on fiberglass technology. Accordingly a 250° F curing system was used. In the new planes a decision was made to go to composites calling for a 350° F curing system on more critical parts, such as the rudder and ailerons. Because of the differences in the coefficient of expansion of aluminum and that of graphite there were some problems in trying to use aluminum tooling with graphite.

There is a tendency to modify the tooling to use plastic, fiberglass, steel, or even advanced composite tooling in place of aluminum.

The F-16 has nearly 300 lbs of composites in its structure.



General Dynamics is using an automated tape layer built by Ingersoll Milling Machine Co.

"A major part of our R & D time is devoted to securing greater efficiency in making composite parts," Boeing's Mr. McMillan comments. "We have to get more cost effective ways of building composite structures. There is doubt about it. They cannot yet compete with aluminum in terms of cost of manufacturing."

Assembly. To a considerable degree, the rush towards composites has been bad news for adhesive bonding. The relationship, materials engineers say, lies in the fact that many parts which might well have been logical candidates for bonded metal wound up instead as graphite epoxy. The promise of PABST has not been entirely lost.

There still is considerable bonding. Should composite structures fall short in meeting the requirements for primary components, adhesive bonded structures will be ready to step in. Some engineers will point out, of course, that the co-curing of composites is a form of resin bonding, and that two-stage bonding involves adhesives.

Lockheed's Mr. Petersen does not agree entirely with this analysis. "We're doing a lot of adhesive bonding now and I think we're going to do a lot more of it in mainframe structures. I think there are a lot of options."

Boeing's Mr. Taylor gives high marks to its automated spar assembly program for the 767.

"Basically it's a big x-y drilling machine where we mount sub-components for the spar. The machine then automatically drills the holes, feeds and upsets the rivets by an electromagnetic technique," Mr. Taylor explains.

"In addition to rivets there are quite a number of titanium fasteners in the assembly. We are developing equipment to install the hard fasteners automatically under computer control. This project looks very, very promising."

Machine Tools. In the near term, Boeing's Mr. Taylor sees very little impact on the use of machine tools resulting from the rapidly increasing use of composites. Present use of composites centers on replacing fiberglass or bonded aluminum secondary structures which involve very little machining. By the year 2000, if composites move into primary structures such as wings, skin and spar mills will suffer.

The major thrust, both in military and commercial planes, is to near-net shape parts. The more expensive the material, as in the case of titanium, the greater the push.

Most of the industry is avidly pursuing flexible manufacturing concepts. The Air Force is expected to sponsor a major study of flexible machining as a corollary to its ICAM activity. Careful attention is being given to German and Japanese experience. This includes more automated materials handling, more automated transfer between machines, more automation in cutter loading and unloading, more automatic tool wear measurement. Attention has shifted from chip-making to peripheral, time-consuming activities.

For instance, Mr. Taylor says, "If I were to identify any one thing which costs us machine tool time, it would be tape tryout. It is tremendously expensive and tremendously wasteful of machine tool time.

Boeing is not keen on the use of robots in critical production operations, according to Mr. Taylor. Fear of damage to very expensive aircraft structures is part of the story. Another aspect is the fact that even Boeing, large as it is, does not have long production runs.

"On the floor, Boeing people move around a lot. Robots don't," was the way one production official expressed it. This does not preclude, of course, use of robots in such operations as painting or electronics.

The aircraft industry is regarded as the most logical candidate to take advantage of high speed machining of aluminum, with which the greatest progress has been registered.

Most of the aircraft companies are, in fact, involved in on-going research if not production. Lockheed, Boeing, General Dynamics, and Vought were among the early leaders.

The aircraft industry is characterized by relatively short runs in which machine utilization rather than cutting speed is the important factor. However, higher cutting speeds are attractive in milling deep pockets and thin sections such as those found in rocket bodies. The Tomahawk missile body, for example, was milled at high speeds.

Lockheed Missiles & Space Co., has worked with high speed machining since its inception in the '50s. Robert I. King, consulting scientist, believes that the great need now is to pull together into systems all of the various factors affecting productivity.

"There are at least a dozen factors which affect the success of high speed machining," Mr. King says. "Our major remaining problems are systems problems."

Lockheed M. & S. Co. currently is milling aluminum at speeds up to 25,000 fpm. One of the limitations is integrating the machine into the system.

"Industry needs to use high speed machining in production," asserts William A. Mitchell, spindle supervisor at Ex-Cello's Bryant Grinder Corp. subsidiary. Bryant is a leader in high speed spindle technology.

Earlier researchers had feared that spindle speeds would be limited by the power available from electric drives. No longer is power a limitation, Mr. Mitchell says. Thirty to 50 hp motors are routinely supplying power to produce spindle speeds of 18,000 to 20,000 rpm cutting aluminum. In one demonstration, a 35 hp motor is running a spindle at 50,000 rpm.

Forging. Wyman-Gordon lugged to the Paris Air Show a 3,500 lb main landing gear support beam for the Boeing 747. The beam was advertised as the world's largest titanium closed die forging, but that was not the main point Wyman-Gordon was trying to make.

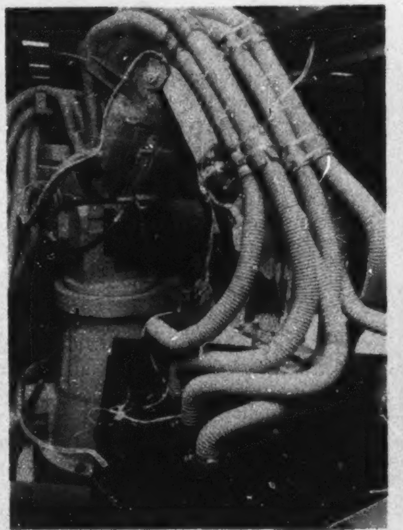
These support beams, of which there are four on each 747, lie at the critical point where the body of the plane meets the wings. They not only are essential for transfer of stress during take-off and landing, but also provide 20 pct of the aircraft's total wing support. Naturally, quality control during the forging process is essential to ensure the structural integrity of this major component.

The significant point is that Wyman-Gordon has forged about 2,000 of these beams in the past 10 years with zero rejections. Thus, titanium, a relatively new kid on the materials block, was reliably forged for large parts, on a mass production basis. By forging the beams, the weight of the aircraft was reduced 250 lbs as compared to a built-up structure.

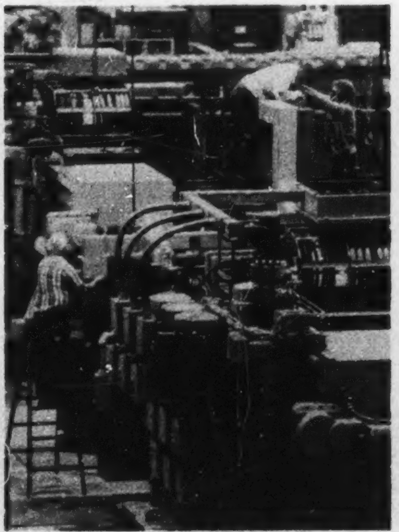
Newer forging technologies—some of them in production and some of them still in the manufacturing R & D phase—are associated principally with aircraft engine parts. An important difference among them is the die temperature. The die temperature in the conventional forging of titanium is 700° to 800° F. Using the hot die, or near-isothermal process, the die temperature is 1500° to 1600° F. Finally the die temperature for isothermal forging is in the 1750° to 1800° F range. The temperature of the forging stock for all methods is 1750° to 1800° F.

These temperatures vary, of course, from those used for nickel-cobalt superalloys and other exotic alloys sharing similar processes.

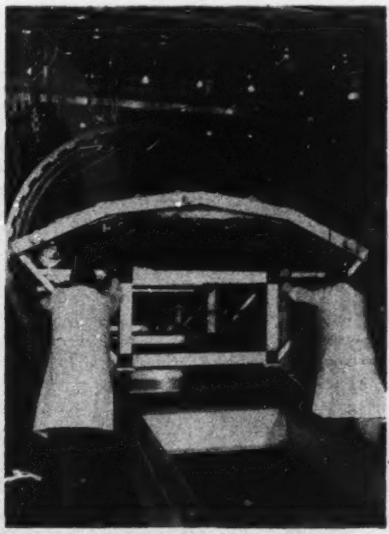
In isothermal forging, the die system is heated to the same temperature as the forging stock. By reducing the heat loss from stock to die, the plastic deformation of metal during the shaping process is significantly improved. The result is that aerospace parts can be forged close to final end use weight and configuration,



Robots for the factory of the future at Northrop. The demonstration project is used for the production of graphite composites. This robot picks up pieces of fabric-like graphite material.



Installing a multi-spindle profiler machine at Northrop's Aircraft Manufacturing Center. Northrop will purchase $50 million in machine tools in the next two years.



At McDonnell Douglas Corp., a PABST panel on an adhesive bonding jig moves into the autoclave. Panel is 30 ft long and 9 ft wide and is used in the building of an aircraft fuselage.

or "near net shape."

The entire isothermal forging operation is performed in a vacuum, or inert gas atmosphere, from the introduction of the melt, or preform, into the heating chamber, to its removal after forming. The vacuum system, or inert atmosphere, is necessary because of the high temperatures and refractory metal die system used to isothermally forge superalloy turbine components. Temperatures ranging up to 2100° F for nickel-base superalloys require the utilization of high strength TZM molybdenum alloy dies, which would oxidize rapidly in air.

By using the isothermal forging process for hard-to-forge aerospace alloys, the preforging weight of parts for some major engine programs is greatly reduced.

One of the advantages of the isothermal process is that it requires less raw material than is necessary to forge similar shapes conventionally.

"In some cases as much as 50 pct of the input material has been saved," according to James E. Coyne, Wyman-Gordon's vice president-technical director. "This amounts to a tremendous dollar saving for engine builders, considering the high cost of alloys today," he added.

Shape refinement plus reproducibility of metallurgical properties also are improved by utilizing isothermal concepts. Mr. Coyne reports that substantial amounts of energy have been saved as well. For example, forgings produced on an 1800-ton isothermal unit might otherwise be produced on an 18,000-ton conventional hydraulic press.

Pratt and Whitney's patented Gatorizing process is a type of isothermal forging.

Near-isothermal forging, sometimes referred to as hot die forging, differs in that the die system is heated to within 150-300° F of the stock temperature, and the forging operation is performed in an air atmosphere. The proximity of the temperatures enhances metal flow in the die system and permits the production of aerospace components close to their final configuration. "Titanium airframe structural forgings of up to 600 sq in. plan view area have been produced by Wyman-Gordon using this process," Mr. Coyne says.

"Near-isothermal forging techniques can be adapted to a broad range of conventional hydraulic presses ranging from 6000 tons to 35,000 tons rating," Mr. Coyne says.

Wyman-Gordon currently is isothermally forging Ti-6Al-4V; Ti-17; and Ti-6Al-2Sn-4Zr-6Mo turbine components up to about 18 in. diam on its 3000-ton isothermal forging press.

Hot isostatic pressing (hipping) has metallurgy process to produce aerospace components, from high temperature superalloys, particularly turbine discs and rings. In this process, powder is placed in a shaped metal container, heated to 2000-2200°F; and then isostatically pressed by an inert gas at pressures up to 15,000 psi.

Metal powders today are getting cleaner and better, and finer mesh powders are available. Handling techniques and testing are improved. The use of hipping to supply forging stock for isothermal or near-isothermal forging is being studied in manufacturing R & D. The hip-plus-forge process takes advantage of both of these technologies to produce turbine engine parts with extremely refined shapes—more than either process is capable of itself. Whether or not physicals are improved by following hiping with forging is a matter of contention.

Materials

SPF Aluminum. Although titanium has held the limelight in superplastic forming (SPF), demonstration parts using aluminum eventually point to far greater activity.

Among the reasons is the bald fact that SPF aluminum generally replaces conventional aluminum parts, and there is far more aluminum to be replaced.

The superplastic range of aluminum is 900° to 960°F compared to 1600° to 1750°F for titanium. Die materials are far less expensive than the 22 Cr-4 Ni-9Mo dies often used for titanium.

Development of low cost dies, in fact, will be the key to further cost reduction through superplastic forming of aluminum, believes Dr. Neil E. Paton of Rockwell International's Science Center, Thousand Oaks, Calif. He is deeply involved in SPF research in the die development area. High on the list for consideration are ceramics.

Rockwell's North American Division has built several complete superplastically formed bulkheads of 7475 aluminum for the T-39 in Air Force R & D programs. The original fabricated bulkhead design called for 18 detail parts and 100 rivets. The SPF version was reduced to one principal part and four clips. On a number of other test parts, Dr. Paton says projected cost reduction has averaged 20 pct; weight reduction, 10 pct.

The capital investment for equipment for SPF is about the same as for a 5-axis milling machine. But, Dr. Paton points out, the length of time the work is in the press is very much less. This means more throughput.

A new program, just getting under way, calls for two different superplastic formed aluminum airframe structural parts. These will be made of "any suitable superplastic aluminum alloy." They are designed as replacement parts for an existing aircraft or missile. The program will examine several fine grain aluminum material concepts.

Meanwhile, Boeing is using higher strength aluminums in upper and lower wing skins and stringers. These are 7150-T6 in the upper wing and 2324 and 2224 in the lower wing.

Titanium. The structure of the new B-1 bomber derivative, LRCA-1, will use approximately 25,000 lbs of titanium—about the same amount as on the most recent of the four earlier B-1's.

Emphasis in the new program will be on getting production started. There will be relatively few engineering changes. About 80 pct of the structure remains unchanged.

A substantial amount of titanium will be used in the wing carry-through area, and the wing pivot areas. Metallurgically, titanium's fracture toughness from a damage-tolerance standpoint was important in its selection.

Very little of the titanium on the new plane will be superplastically formed.

Metal Powders. There's no doubt that powder metallurgy is attracting lots of interest, particularly by the Air Force and most particularly in the engine area. PM is being considered in developing low density aluminum alloys.

As for commercial planes, Boeing's Mr. McMillan applies three yardsticks: "A new material must either give us better properties; save money in manufacturing; or possibly save our customers money in maintenance."

However, Boeing is following developments in rapid solidification rate (RSR) materials.

The broader interest in powder metallurgy generally is following several paths, and conceivably could lead to production parts if the cost-benefit criteria are met. ☐

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COMPOSITE MAKERS STILL WAIT FOR A BREAKTHROUGH

Although business levels have improved, producers still lack in material fabrication.

By Robert J. Regan

Producers of carbon fiber composites count themselves among the happy few industrial raw materials industries enjoying improving business levels. This is mainly because the structural material, still something of a "new kid on the block," has its kite hitched to the aircraft/aerospace market while its competitors in the metals sector continue to wrestle with limping automotive and housing markets.

The graphite composite producers intend to try their luck with the automotive market during the Eighties but, as things stand today, they aren't looking for any sudden breakthroughs.

As Bennett Nathanson, manager, commercial research and new business development for Celanese Plastics & Specialties Co. put it at the Spring meeting of the Chemical Marketing Research Association: "if there is one end use that is a disappointment in not having developed, it is the transportation market—principally automotive."

The Celanese official said flatly that, despite Detroit's urgent need for lightweight vehicles, when carbon fiber is weighed against aluminum, high-strength steel and new glass fiber technologies, "the cost penalty per lb of weight saved is often too high."

And, while the aircraft/aerospace companies accommodate themselves to the elaborate assembly techniques required by carbon fiber materials, the car companies' needs are quite different. What is lacking, says Mr. Nathanson, is "technology to fabricate linear carbon fiber reinforcements on a high-volume basis."

John R. Paus, vice president and general manager, carbon fibers for Union Carbide Corp.'s carbon fibers division, notes that "at the moment, more automotive development work seems to be going on in Europe than in Detroit." The European car companies, he adds, are concentrating on development programs based on the newer petroleum pitch-based fibers. Union Carbide's original structural reinforcing carbon fiber was made with a rayon precursor. This gave way to the currently popular PAN (polyacrylonitrile) based fibers in the late '60s. Union Carbide expects to have its 500,000 lbs a year pitch-based carbon fiber plant and a 1-million lbs a year PAN facility in Greenville, S.C. onstream later this year. Mr. Paus said pitch-based materials "hold great promise for cost effectiveness in industrial applications."

Carbon Fiber Price Levels to Drop

In Constant Dollars

	1975	1981	1986-90
Aircraft Grades	$45-300	$30-550	$25-90
General Purpose	$35	$18-30	$15-25
Automotive Grades	—	$18-20	$10-25

Source: Celanese Plastics & Specialties Co., based on general industry projections.

The showcase for carbon fiber composites was a sedan unveiled by Ford Motor Co. at the 1979 SAE convention in Detroit. Mr. Paus said the full-sized demonstration car, which had its weight dropped to 2,700 lbs from 4,700 lbs, showed that carbon fiber composites can be used.

The problem, he said, is that "the absence of economical manufacturing technology is a major obstacle—as is today's cost of carbon fibers versus conventional materials."

The concept of fast-process-time resins and hybrid fiber arrangements layered into premanufactured, warm, formable sheets to utilize existing cold stamping presses is being developed, he said.

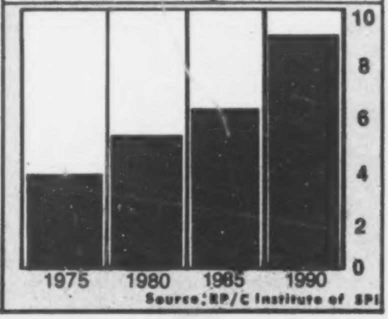
Mr. Nathanson also notes that carbon fiber has to contend with more sophisticated glass fiber processing such as PPG's XMC, a filament wound matched die molding material, as well as variations of the material with glass levels above 50-60 pct. These materials are getting into structural, not just hang-on parts, including wheel hubs and glass/epoxy springs.

"Auto engineers will start with fiber glass first in design, and then move to carbon fiber or hybrids as the next steps," the Celanese official predicted.

Mr. Nathanson said automotive volume is minimal at present, but Detroit's use of carbon fiber composites could range between 800,000 lbs and 1.5 million lbs by 1986. A lot depends on the price of gasoline and the motoring public's attitude toward downsized cars, he said.

The lower end of the 1986 projection for automotive applications matches the 1980 total consumption figure estimated by Union Carbide. Mr. Paus projects a 35 pct annual growth rate for PAN structural reinforcing fibers right through the '80s, with the aircraft industry the dominant user.

Composites Used by Auto Industry



Source: RP/C Institute of SPI

He notes that Boeing is planning a significant number of CF/E (carbon fiber epoxy) composite parts on its 767 airplane and further penetration on its subsequent 757. The material's cost effectiveness, Mr. Paus said, comes from both increasing fuel costs and from expensive competing materials such as titanium, magnesium and aluminum forgings.

As for pitch-based carbon fiber, the initial commercial success has been in such friction materials as brake discs, clutch plates and similar products.

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EFFECTIVE JULY 27, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	256	258	264	212
Buffalo	67	68	71	45
Pittsburgh	388	402	411	291
Youngstown	131	123	135	61
Cleveland	156	173	168	132
Detroit	175	172	156	87
Chicago	567	563	599	386
Cincinnati	102	95	103	84
St. Louis	68	67	94	64
Southern	249	254	246	217
Western	142	144	156	113
U.S. Production	2,301	2,319	2,403	1,692

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)..........................gross-ton 80.50*
Old range, non-bessemer............................gross-ton $28.75
Mesabi, regular-unscreened......................gross-ton $28.50
Mesabi, non-bessemer......................gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective July 27, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,301	2,319	73,797	64,703
Capability Utilization Rate	77.8	78.4	83.9	74.1

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.739
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 90.17	$ 90.17	$ 89.17	$ 71.17
No. 2 bundles	$ 62.83	$ 61.17	$ 61.17	$ 51.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$102.50	$102.50	$99.50	$ 69.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	76.50
No. 1 steel, Chicago	88.50	88.50	88.50	67.50
No. 1 bundles, Detroit	91.50	91.50	91.50	60.50
Low Phos., Youngstown	96.50	96.50	96.50	70.50
No. 1 mach'y cast., Pgh	94.50	94.50	99.50	85.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	117.50
No. 1 mach'y cast., Chi	127.50	124.50	124.50	116.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective July 27, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	82.55-83.00	82.20-83.00	7/27/81
Lead	42.00	41.00-42.00	7/14/81
Magnesium ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$2.50
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$408.75
Indium, 99.9%, troy oz	$8.75-$10.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$435-$440
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$8.58
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

July 20—599.56
July 21—610.18
July 22—612.70
July 23—618.43
July 24—635.23

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	73
No. 2 copper wire	64
Light copper	55

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	69
No. 2 copper wire	60
Light copper	51
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	37	—38
Mixed L.C. clips	29	—30
Old sheets and cast	22	—23
Boring and turnings	19	—20
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	49	—50
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE JULY 27, 1981

MATERIALS NEWSFRONT

(Effective July 27, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$102.00 to $103.00
No. 2 hvy. melting	86.00 to 87.00
No. 1 dealer bundles	116.00 to 117.00
No. 1 factory bundles (auto)	119.00 to 120.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	116.00 to 117.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	120.00 to 121.00
Heavy turnings	86.00 to 87.00
No. 1 RR hvy. melting	111.00 to 112.00
Rails, 2 ft. and under	120.00 to 121.00
Scrap rails, random lgth.	103.00 to 104.00
RR specialties	117.00 to 118.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	82.00 to 83.00
No. 1 dealer bundles	103.00 to 104.00
No. 1 factory bundles (auto)	107.00 to 108.00
No. 2 dealer bundles	69.00 to 70.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	104.00 to 105.00
Shredder scrap	103.00 to 104.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	119.00 to 120.00
Low. phos. punchings plate ¼ in. and heavier	130.00 to 131.00
Low phos. 2 ft. and under	123.00 to 124.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	99.00 to 100.00
Reroller rails	129.00 to 130.00
Rails, 2 ft. and under	129.00 to 130.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	104.00 to 105.00
Stove plate	102.00 to 103.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	655.00 to 665.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	150.00 to 160.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	109.00 to 112.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	103.00 to 106.00
Shredder scrap	88.00 to 91.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	98.00 to 101.00
Low phos. 2 ft. punchings	118.00 to 121.00
Electric furnace bundles	115.00 to 118.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	79.00 to 82.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 71.00 to $ 72.00
No. 2 hvy. melting	69.00 to 70.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	90.00 to 91.00
Drop forge flashings	69.00 to 70.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	39.00 to 40.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	640.00 to 650.00
18-8 turnings	490.00 to 500.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$104.00 to $105.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	102.00 to 103.00
No. 2 dealer bundles	58.00 to 59.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	96.00 to 97.00
Electric furnace bundles	96.00 to 97.00
Galvanized bundles	83.00 to 84.00

Cleveland

No. 1 hvy. melting	$ 89.00 to $ 90.00
No. 2 hvy. melting	56.00 to 57.00
No. 1 dealer bundles	104.00 to 105.00
No. 1 factory bundles	106.00 to 107.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	120.00 to 121.00
Low phos. punchings plate	120.00 to 121.00
Drop forge flashings	61.00 to 62.00
Foundry steel, 2 ft. & under	91.00 to 92.00
No. 1 RR hvy. melting	110.00 to 111.00
Rails, 2 ft. and under	129.00 to 130.00
Rails, 18 in. and under	130.00 to 131.00
Steel axle turnings	71.00 to 72.00
Railroad cast	115.00 to 116.00
No. 1 machinery cast	115.00 to 116.00
Cupola cast	105.00 to 106.00
Stove plate	80.00 to 81.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	81.00 to 82.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	91.00 to 92.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	81.00 to 82.00
Structural and plate, 2 ft.	109.00 to 110.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	90.00 to 91.00
Rails, 18 in. and under	114.00 to 115.00
Angles an splce bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 69.00 to $ 70.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	80.00 to 81.00
No. 2 bundles	43.00 to 44.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	22.00 to 23.00
Low phos. 18 in. and under	100.00 to 101.00
Rails, random length	80.00 to 81.00
Rails, 2 ft. and under	103.00 to 104.00
No. 1 cupola cast	74.00 to 75.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	99.00 to 100.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	32.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	650.00 to 670.00
18-8 turnings	550.00 to 570.00
430 prepared solids	120.00 to 140.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 62.00 to $ 64.00
No. 2 hvy. melting	54.00 to 56.00
No. 1 dealer bundles	74.00 to 76.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	74.00 to 76.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	78.00 to 80.00
No. 2 bundles	65.00 to 67.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	86.00 to 88.00
No. 2 bundles	57.00 to 58.00
Machine shop turn.	17.00 to 19.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	79.00 to 81.00
Cupola cast	95.00 to 97.00

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

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1981

Chilton's

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

AUGUST 24, 1981

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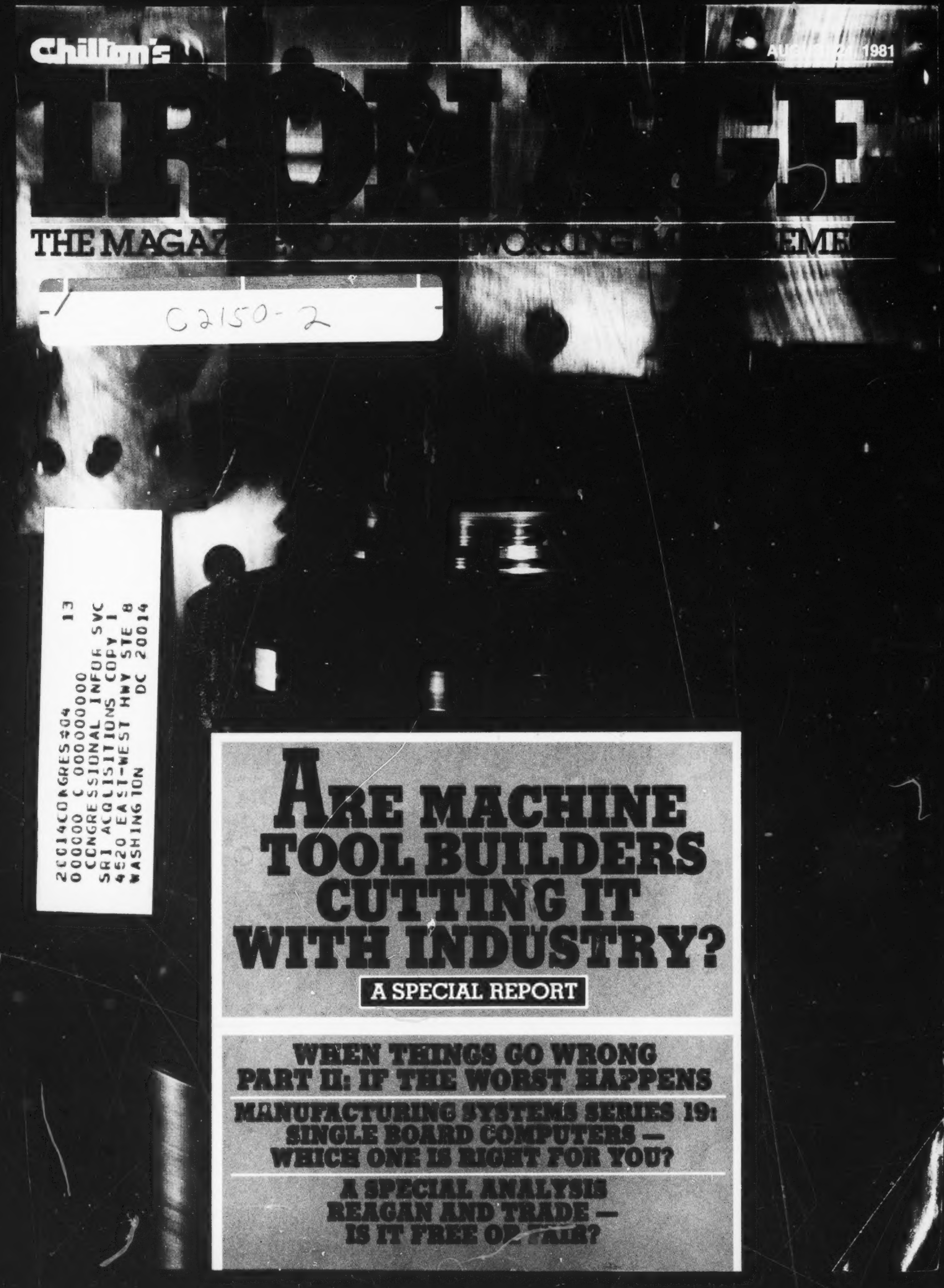

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ARE MACHINE TOOL BUILDERS CUTTING IT WITH INDUSTRY?

A SPECIAL REPORT

WHEN THINGS GO WRONG PART II: IF THE WORST HAPPENS

MANUFACTURING SYSTEMS SERIES 19: SINGLE BOARD COMPUTERS — WHICH ONE IS RIGHT FOR YOU?

A SPECIAL ANALYSIS REAGAN AND TRADE — IS IT FREE OR FAIR?

IRON AGE

VOL. 224 No. 24

AUGUST 24, 1981

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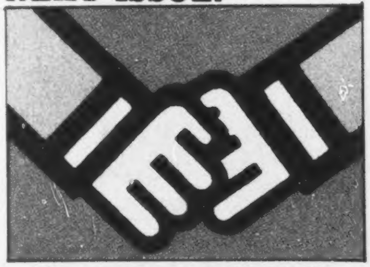


The urge to merge takes hold

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

MACHINE TOOL NEWSFRONT

The trend in robots is up—and that's the truth

Everybody wants to get into the act these days. At least that's the way it seems when the subject of robotics pops up.

And they all seem to have their views as to the current state of robotics in the United States. Some people contend that robotics is taking off like a rocket. Others say that we're really dragging our heels when it comes to the application of robots in American industry. In short, fast is too slow. Interpreted another way, progress is just great but not great enough.

But that's not the only area of differing opinions. Claims by robot manufacturers of their market shares differ. Claims of dollar sales differ. Claims of robot capabilities differ. Claims of the foreign competitive picture differ. Again, in short, if you believe everything you read about robots and robotics, it's like going through a bibliography of conflicting reports.

At last fall's Robots V Conference of Robotics International of SME, Joseph F. Engelberger, president of Unimation, Inc., Danbury, Conn., who is generally known as the "father of the American industrial robot," shook up the audience by trying to straighten out some of the double-talk in the industry.

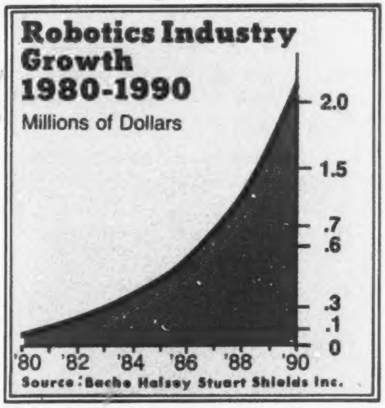
"I want to start by giving you a few jolts," he said. "The first jolt is that all robot manufacturers lie: About their market position, about their product quality and what have you."

Then he went on to explain the division of opinion and to justify his comments. "They are not really bad lies," he said, "they are white lies. The manufacturers have some beautiful products; everything is going to be great; and they are going to sell a lot of them; but they're not getting the orders. So, they hype it up a bit."

As for the conflicts in the numbers of robots used worldwide, he explains: "The Robotics Institute in Japan is the worst. They have numbers that are unreal for the number of actual robots in Japan. Many don't exist because in Japan any machine that goes 'bang bang' between adjustable stops is a robot. Our definition, requiring reprogrammability and certain articulations, is more demanding."

What about robot capabilities? Are they everything they're claimed to be? Here, too, the picture appears to be clouded. Or is it just misplaced emphasis?

At a symposium on robotics sponsored by Bache Halsey Stuart Shields Inc. and held in New York, Lester V. Ottinger, president of Robot Systems, Inc., Atlanta, contends, "The press has focused on the 'high technology' portion of robotics and/or system elements now in research and development, which is good for selling magazines but is often negative for some potential users.


Robotics Industry Growth 1980-1990

Millions of Dollars

Source: Bache Halsey Stuart Shields Inc.

"Many potential users," he went on, "live in the harsh realities of unsophisticated plants and cannot imagine how they can use 'high technology gleaming computer-controlled robots let alone ones with vision cameras.' These potential users need to hear about and be shown how commercially available robots can be used in plant environments of today. The high technology robots with vision systems are for more experienced and sophisticated potential users."

If the past has been clouded with conflicting statistics and reports on the health of the robotics industry, what about the future? In talking to a group of financial analysts in Philadelphia, John A. D. Geier, president of Cincinnati Milacron, made the point very clear. "The plain fact," he said, "is that we don't know the size of the potential market for robots. Industry is just beginning to find out how and where to use them." He then went on to project that ten years from now, robot sales "may well exceed $700 million."

What it all boils down to is that different people interpret the figures—real or imagined—from different viewpoints. What are their yardsticks? What are their goals? What are their hopes? And what are the figures being compared with?

Laura Conigliaro, a research analyst with Bache Halsey Stuart Shields Inc., tried to put some of the figures on robotics into proper perspective at a recent institutional investors conference.

She said, "In 1980, the GNP of the U.S. was $2.6 trillion. Sales of robots by U.S.-based companies was about $100 million, less than four thousandths of 1 pct of the GNP, scarcely an eyedropper's worth. Clearly, it is hardly the size of the robot industry that is responsible for our interest in robotics or its potential impact. In part, the impact stems from the fact that robots, and other forms of automation, can have an enormous multiplier effect throughout many industries."

She then went on to explain that the $100 million in 1980 robot sales by all U.S. robot makers included about 20 pct that went abroad. "Only about 1450 units were sold," she said. "By 1990, revenue—by our estimates—will be about $2.1 billion, with slightly over 31,000 units being sold, for a compound annual revenue growth of 35.4 pct."

Mr. Engelberger puts the investment in robots in another light. He says: "The difference between the cost of human labor in the United States for the automotive industry versus a robot's operating costs per hour is a dramatic difference. It's $5 an hour for a robot and nearly $20 an hour for human labor."

Perhaps the most positive fact of robot statistics is that the trend is up—strongly.

Balas buy brightens Sandvik 5-year plan

Sandvik predicts that its acquisition of Cleveland-based Balas, maker of toolholders, workholders and other machine tool accessories, will result in the tripling of that company's sales over the next five years.

Sandvik bought Balas from Warner & Swasey subsidiary of The Bendix Corp.

"We also plan to invest between $6 million and $8 million in capital expenditures for new equipment and plant modernization over the next few years in order to increase output to meet the growth goals we have set for Balas," said Sandvik president Donald E. Debacher.

Sandvik, Inc., headquartered in Fair Lawn, N.J., is the largest of some 40 companies within the international Sandvik Group, which is based in Sweden and does more than $2 billion a year in worldwide sales.

SPECIAL ANALYSIS— IS U.S. TRADE POLICY FREE, FAIR OR OPEN?

In an exclusive interview, Secretary of Commerce Malcolm Baldrige discusses the future course of America's overseas trade.

By Edwin W. Bowers

A Reagan trade policy? There is none. So says the American Importers Association, among others. But in government sometimes the absence of something means the presence of what's needed.

The Reagan Administration's current thinking can be summed up in seven words: "Give it back to the private sector." That's what many government officials assert, as evidenced by the President's victory on tax and budget cuts and, now, trade policy.

"I don't believe the Administration has yet addressed the subject of improving exports from the U.S. and improving the balance of payments," says W. Paul Cooper, President and CEO, Acme-Cleveland Corp. "Nevertheless," he says, "I'm encouraged because people such as Special Trade Representative William Brock are very mindful of the need for a strong U.S. position in world trade."

Indeed, Mr. Brock and Secretary of Commerce Malcolm Baldrige disagree vehemently with assertions such as Mr. Cooper's. In an exclusive interview with *Iron Age*, Secretary Baldrige cited the Reagan Administration's "White Paper" on trade as evidence that the White House is firmly committed to developing this country's trade potential, exports and imports.

Nevertheless, the White Paper does place heavy stress on the free market to stabilize the U.S. role in international trade. Broadly-worded, the nine-page document says, among other things, American companies should be on their own in meeting legitimate competition from abroad.

"I think the document is comprehensive enough," Secretary Baldrige says. "It represents the viewpoint of this Administration fairly. It can't cover every contingency, a policy paper shouldn't be meant to do that and it isn't really meant to do that. It does lay out the broad framework that's going to govern our trade policy during this Administration."

"The government can help create an environment conducive to efficient and profitable production," says Mr. Brock. "But it is private individuals and enterprises who have to take the initiative to seize economic opportunities."

Interestingly amid all the debate over free versus fair trade, President Reagan has interjected a new term—"open trade." Secretary Baldrige, who played a key role in formulating the White Paper, said the White House was reacting to "code word" implications of the other two terms. "Open trade is a good term," he says. "It has all the connotations of a two-way street, open at each end. Free trade has frequently been used in the past by some of our competitors to mean free trade in the U.S. but not necessarily in their country. Fair trade—a perfectly good phrase—has come to mean protectionism in the eyes of some individuals. Open trade is a new enough phrase so that nobody can claim it for their own yet. And I think it serves the purpose."

"We can't afford to be locked out of some markets where 'home industries' are being protected and at the same time let others' products have free rein in the U.S.," says Mr. Cooper. "I would like to see our government go to the bargaining table on all tariff and non-tariff matters and take a strong position because we do have some cards to play with respect to financing and on non-tariff barriers."

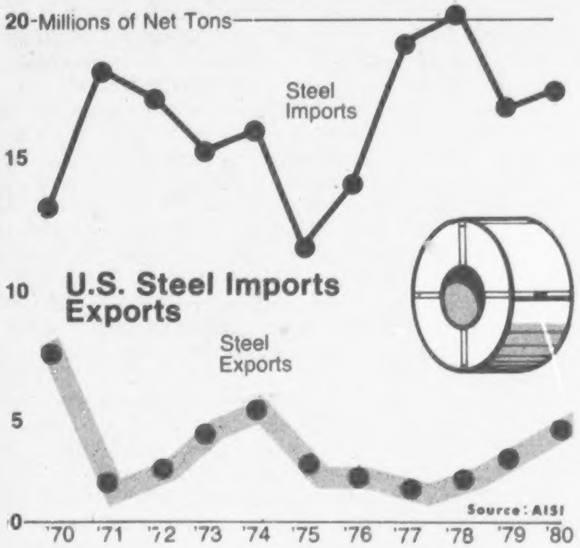
"We intend to continue negotiating down any kinds of barriers to trade," says Secretary Baldrige.

A ministerial level review of the General Agreement on Tariffs and Trade (GATT) is scheduled for the Fall of 1982. The goal of the high-level parley is to make trade rules less protectionist.

"There's no question the Reagan Administration's basic posture is one of striving to encourage exports," Secretary Baldrige says. He also agrees

Congress hears the Reagan Administration's views on trade from Special Trade Representative William Brock, left, Transportation Secretary Drew Lewis, center, and Commerce Secretary Malcolm Baldrige.

Imports Keep Rising While the Trade Balance Falls



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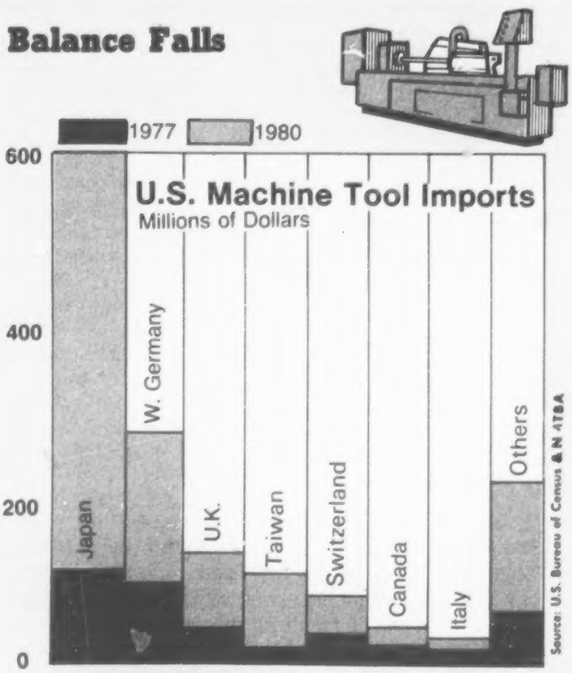
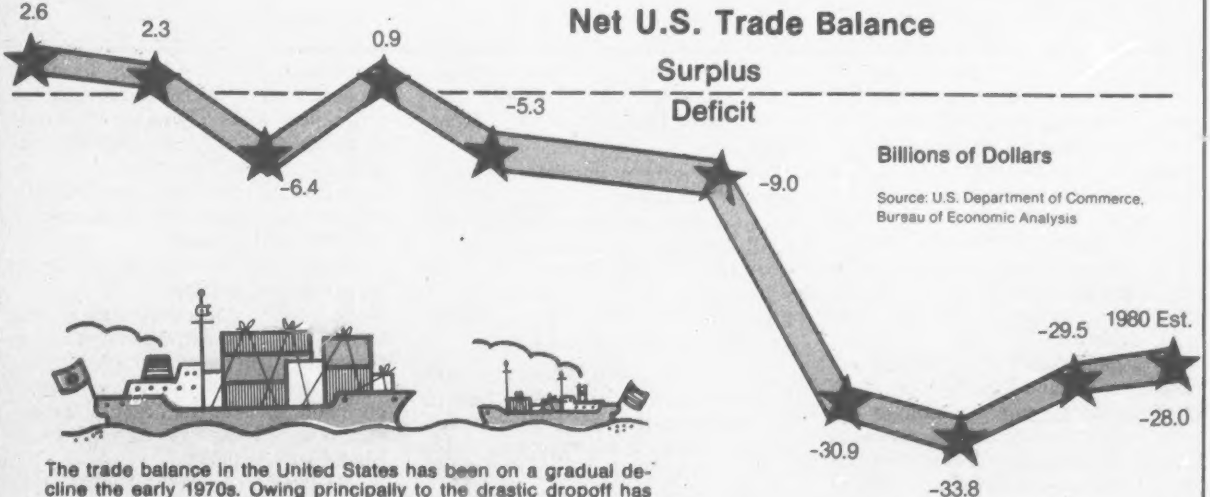
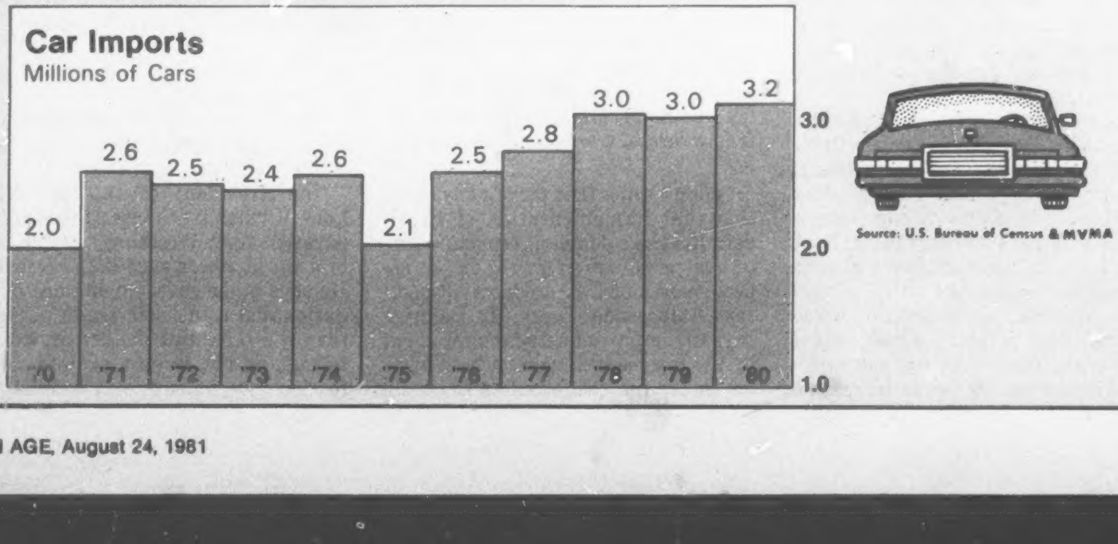


Source: U.S. Bureau of Census & N ATBA



Source: U.S. Department of Commerce, Bureau of Economic Analysis

The trade balance in the United States has been on a gradual decline the early 1970s. Owing principally to the drastic dropoff has been the acceleration of oil imports, steel, and automobiles.



Source: U.S. Bureau of Census & MVMA

'Critical Technologies' List Still on the Drafting Table

For years the government has been laboring to develop a list of "critical technologies" to be included on a list of items not allowed to be exported to Communist Bloc countries. The effort is still in the drafting stage.

Commerce Department officials insist a "consistent and clear" export policy including much tighter controls on exports of high technology goods and equipment to the Soviet Union is in the works. But when it will appear no one is able to say.

The Reagan Administration is consulting with its allies to get their support for increased trade restrictions against the Soviets, reliable sources report. "The bottom line is that any controls implemented, in order to be effective, will have to be multi-lateral," Lawrence J. Brady, Assistant Commerce Secretary for Trade Administration, told members of a Commerce Department advisory committee on East-West trade.

The U.S. East-West trade policy study probably won't be finished before the end of this Summer. Part of the problem is it is being carried out by several departments and through at least three inter-agency committees.

However, a government review of U.S. export policies was completed in 1980 resulting in stricter standards for high-technology exports. At that time the Administration said all export licenses to the Soviet Union would undergo closer scrutiny. Also, the U.S. stated its intention to ask its allies to agree to stricter controls on technology sales.

But the latter controls method must go through the Coordinating Committee for Multilateral Export Controls (COCOM). It is an informal group of countries made up of all members of the North Atlantic Treaty Organization except Iceland but including Japan. The COCOM draws up lists of products that they agree not to sell to the Communist Bloc countries. It has been criticized by many U.S. companies and associations as being ineffective. "If the Reagan Administration's new policies concerning East-West trade mean a crackdown on COCOM violations by our trading partners, then we endorse and encourage this new emphasis," says James A. Gray, President, National Machine Tool Builders' Association. NMTBA has for years asserted members of COCOM circumvent their own rules against selling certain products and technology to Communist Bloc countries.

The problem for the Administration is that its allies probably won't be very receptive to stricter export controls on technology or anything else. American businessmen as well as European would likely resist efforts to control the export of know-how as well as products. COCOM officials argue that almost any export other than agricultural can be linked indirectly to military use.

Getting Allied support won't be easy. European NATO and COCOM members are quick to point out they are much more dependent on trade with the Eastern Bloc nations than is the U.S. In a published report, a European trade official said "We do not know what the new Administration wants. It is still thrashing out a policy. They do not know where they are going."

that "in the long run" the only way to increase exports is to increase imports. However, the Commerce Chief insisted emphasis must be put on the phrase "in the long run." He clarified: "Importing countries have to generate the hard currency in order to be able to export. If the U.S. won a whole series of trade wars around the world and wiped out everybody's ability to buy our exports it will have won nothing."

On a global scale it's virtually impossible to expand exports while curbing imports. Certainly a balance has to be struck. Improving U.S. access to foreign markets requires a recognition of the importance of a long-term commitment to the maintenance of an open world trading system. If the U.S. hopes to expand exports it must recognize that its trading partners must have the foreign exchange to obtain those goods.

Improving access to world markets depends, in large part, upon reliable multi-lateral trade rules. Without such rules the world trading order threatens to break down into a series of bilateral trade disputes which have a tendency to multiply. Some observers say that under the strain of current economic conditions the world trading order is facing a real danger of collapse. Part of this is the result of countries coming under increasing political pressure to restrict access to their markets so as to protect noncompetitive segments of their economies.

The American Importers Association, in a statement filed with the U.S. Congress, charges the U.S. currently pursues separate policies toward imports and exports, toward developing countries, toward Japan vs. Europe and toward specific industries such as steel and automobiles.

"It is U.S. policy," concedes Ambassador Brock, "to deal with individual problems through bilateral negotiating efforts in the short run and to seek to negotiate new multi-lateral disciplines over the longer term.

Says the AIA: "Trade can and should play a vital role in any program of economic recovery but before this can happen the country must do a better job of coordinating trade policy and integrating it fully into the framework of a broader economic policy."

"I don't think that there's any question that implementation of President Reagan's domestic economic program will improve the competitiveness of U.S. products abroad," says Ambassador Brock. Mr. Baldrige says the improvements brought about by the budget and tax cuts "add up to an ability for U.S. business to obtain more cash flow, to invest in plant modernization, increase investment and reduce costs. Those are the kinds of things that will help the U.S. regain its competitive edge in the industries that have lost it and keep the competitive edge in the industries in which they still have it."

"If the Administration economic plan has one message," say the importers, "it is that the marketplace, not the government, should allocate resources. The inter-relationship between trade and overall economic performance is at the heart of the debate over the need for and the function of a trade policy.

"No longer can the U.S. afford to consider trade restrictions as mere exceptions to the overall economic program if, at the same time, the U.S. wishes to remain credible and effective in its attempts to expand access to foreign markets."

"We're going to see increased and tough export competition," says Secretary Baldrige.

The President of the AFL-CIO, Lane Kirkland, criticizes the Administration for advocating "free trade" in a world where such does not exist. He says other governments are more nationalistic in their trade policies than the U.S. "But the cry of protectionism is not leveled against those foreign governments, only against the

U.S. producers who complain."

Secretary Baldrige says Mr. Kirkland is correct "but only in a narrow sense." He adds: "Free trade is a goal toward which we all strive and are working toward. But it's like any form of perfection; it's never achieved completely. It's the degree of achievement that is noteworthy, not the absolute achievement."

Mr. Kirkland called for "closer monitoring of exports and imports and their impact on the U.S. economy."

On imports, the Chairman of the United States Fastener Manufacturing Group, Robert Blinken, is calling for a thorough Congressional review of U.S. trade policies as they relate to imports and national security interest. Mr. Blinken is also Chairman of the Board of the Mite Corporation. The USFMG is an ad hoc group made up of 16 companies which account for a major portion of the fasteners produced in the U.S.

The USFMG says government's not paying attention to vital product imports such as fasteners constitutes a "dangerous blind spot affecting national security." Mr. Blinken maintains the capacity of a number of key industries—including fasteners—to respond in a national emergency has been displaced by substantial import penetration.

A similar view is expressed by the machine tools industry. Nathaniel S. Howe, Litton Machine Tool Systems Group Vice President, says: "Our industrial base is becoming dependent upon foreign sources for spare parts and service, particularly machine tools. During periods of mobilization in a national emergency this foreign source dependence could cause severe production problems and could seriously threaten our national security."

The fasteners group along with machinists and steelworkers have petitioned the government to extend import duties scheduled to expire at the end of this year. The fasteners producers blame in part the trigger price mechanism on steel as contributing to their problems.

According to the fasteners makers, controls on steel imports encourage foreign steel mills to ship wire rod to the U.S. in fabricated form such as nuts, bolts and screws. Trigger prices also raise the cost to U.S. fastener makers of steel wire rod, the USFMG asserts.

Asked how much longer the TPM can continue, Secretary Baldrige says so long as the principals want it to continue. He pointed out, however, that the mechanism has a statutory limit which prevents it from going beyond 1982. "The TPM is there to serve the best interests of American steel producers, the European, Japanese and Canadian producers. So long as they want it to continue, which will be as long as it's in their own self interest, TPM will continue. When it stops being in the self-interest of any one of those entities it can easily be brought down. The Commerce Department is in constant contact with all of the foreign steel producing countries and we see a real desire to keep the TPM."

"We're running into an increasing problem of subsidization by our foreign competitors of their industries which they perceive as potential export leaders in the next decade," says Secretary Baldrige. "These, too, have to be included in a list of what we consider unfair trade practices because they affect not only imports into this country but competition with our own industries in third country markets."

As to the future there certainly will be occasions in the conduct of foreign policy when the use or threat of the use of trade sanctions might be necessary. But these occasions should be the exception rather than the rule. As past history has shown efforts to tinker with trade for foreign policy purposes can produce major ruptures in business relations which sometimes never heal. Trade depends in large part upon the perceived reliability of the trading partner.

Now enjoying the full support of the White House is legislation allowing financial institutions to set up export trading companies. At first reluctant to endorse the measure, Secretary Baldrige now says "we think it's a very important bill because it's going to help medium and small companies that are not now exporting to do so. We heartily endorse it."

The legislation amends banking and antitrust laws to permit manufacturers, construction firms, banks and export service companies to combine their resources in order to expand their exports. Under the bill's provisions export trading companies could receive Commerce Department or Small Business Administration operating loans and Export-Import Bank guarantees for "bridge loans." Bank control of an export trading company would be subject to the approval of bank regulatory agencies.

"We believe," says James A. Gray, President, National Machine Tool Builders' Association, "Export Trading Companies can be of significant assistance in making American goods and services internationally competitive once again."

However, Mr. Gray says, "we are realistic enough to know that export trading company legislation alone is not a panacea for all of America's foreign trade difficulties." □

DISC Replacement a Possibility, Baldrige Says

Commerce Secretary Malcolm Baldrige told *Iron Age* exclusively the Administration is working to find a U.S. trading system to replace the Domestic International Sales Corporations (DISC). "It appears that our present DISC program, because of some technical reasons, is not compatible with some of the GATT provisions," he told *Iron Age* Washington Editor Edwin Bowers. "We think it's best at this stage to come up with a proposal to try and accomplish the same end result as DISC did in another way that is GATT compatible."

Reportedly GATT concluded the DISC system violates its regulations that bar exempting export income from taxation.

It has been reported Reagan Administration plans—merely on the drawing board at this time—would give U.S. exporters $1 billion more in tax reductions than those provided under the DISC program.

The idea is to eliminate the DISC and replace it with a system taxing exporters at a zero rate. Created would be a system of "worldwide corporations" whose income technically would be taxed, but at a zero or near-zero rate. Treasury Department preliminary studies indicate the new plan would give exporters $2.8 billion in annual tax relief.

In 1979 the Carter Administration agreed with GATT officials that DISC was incompatible with the trade pact's provisions. The most recent understanding between the Administration and GATT officials is that the U.S. will agree to final disposition of the DISC case after October with a corollary promise that GATT won't penalize the U.S. for continuing the program until Congress has time to enact a substitute, probably about early 1983.

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METALWORKING ORDER TRENDS

The waiting game is over—now what?

For some months now, it has seemed that the wheels of industry have slowed to a near-standstill as if awaiting a magic 'go' signal from Washington. That signal has now been flashed by the Congressional clearing of the Reagan economic program.

Certainly, if the news from Washington does start the wheels rolling freely again, then the flow of new orders to metalworking plants should pick up as strongly as any other element in the economy. After all, Reaganomics is called a supply-side concept. And, as one economist notes, "Metalworking is about as basic supply side as you can get."

In June, new orders flowing to durable goods manufacturers (85 pct metalworking), totaled $88.5 billion. That was up a tepid .4 pct from May and was the weakest monthly rise since the start of the year. And the monthly gains before June weren't too hot, either.

A look at the flow of orders over 3-month spans gives a better perspective than does single-month snapshots. In the April-June period, orders averaged $88.0 billion per month. In the preceding January-March period, orders averaged $85.4 billion. That's forward movement in current dollar terms, of course. But after allowing for inflation, the trend line is a plateau at best.

In fact, dollar volume of orders in June in inflation-adjusted terms, were about where they were in September of last year.

So, it is clear that it the new tax bill does give an anticipatory push to business, those in durable goods lines will be appreciative.

Looking beyond the overall order figures for June, it can be said that it was a mixed month. For example, orders for electrical machinery and fabricated metal products were up—7.4 pct and 4.2 pct, respectively. But orders for primary metals and transportation equipment were down—by 4.6 pct and 3.8 pct, respectively.

And orders for the big tag goods were down, also. Orders received by producers of nondefense capital goods were off from May by 2.6 pct.

It is true that there is little to smile about in the June orders data. But when these orders are viewed in relation to the overall economy, things don't look too bad.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$333.1	$322.9	$299.6
Manufacturing, Total	4th Qtr.	133.5	130.5	118.6
Manufacturing, Durable Goods	4th Qtr.	68.7	64.9	59.8
Mining Industry	4th Qtr.	17.9	17.5	15.3
Key Indicators, Durable Goods Manufacturing				
New Orders	June	88.5	88.2	70.3
Shipments	June	88.5	86.7	71.9
Inventories	June	178.1	177.6	169.8
Unfilled Orders	June	315.0	315.0	295.8
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	June	23.2	23.9	21.1
Capital Goods Producers, Defense Industries	June	5.1	5.4	4.5
Primary Metals, Total	June	11.3	11.8	8.8
Steel (SIC 331)	June	6.0	6.1	3.9
Iron & Steel Castings (SIC 332)	June	1.1	1.1	.8
Nonferrous Metals	June	4.2	4.6	4.1
Nonelectrical Mach.-Equip. Industries, Total	June	17.2	17.1	14.2
Engines & Turbines	June	1.4	1.3	.7
Farm Machinery & Equipment (Shipments)	June	1.3	1.2	1.1
Construction, Mining & Materials Hdlg. Equip.	June	3.5	3.5	2.6
General Industrial Machinery	June	1.3	1.6	1.2
Fluid Power Equipment** (Index-1972=100)	June	298	266	201
Metalworking Machinery	June	.7	.7	.9
Machine Tools, Total (Millions $, Unadjusted)	June	307.2	228.0	457.2
Machine Tools, Metal-Cutting***	June	251.9	179.0	414.2
Machine Tools, Metal-Forming***	June	55.4	49.0	43.0
Electrical Mach. & Equip. Industries, Total	June	12.6	11.7	10.1
Elec. Transmission Equip. & Industrial Apparatus	June	1.9	2.1	1.8
Household Appliances	June	1.2	1.1	1.0
Communication Equipment	June	3.9	3.1	2.9
Transportation Equip. Industry, Total	June	19.3	20.1	14.4
Motor Vehicles & Parts (Shipments)	June	13.4	12.3	7.6
Aircraft, Missiles & Parts	June	4.2	5.8	5.5
Shipbuilding & Military Tanks	June	.9	1.1	1.0
Fabricated Metal Products, Total	June	11.1	10.6	8.6
Instruments, Total	June	4.4	4.3	3.6

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

EFFECTIVE AUGUST 3, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	268	256	268	198
Buffalo	70	67	74	46
Pittsburgh	395	388	389	247
Youngstown	128	131	135	54
Cleveland	152	156	180	109
Detroit	175	175	173	88
Chicago	568	567	595	323
Cincinnati	90	102	107	82
St. Louis	88	68	91	53
Southern	224	249	250	283
Western	140	142	157	110
U.S. Production	2,298	2,301	2,419	1,493

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective August 3, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,298	2,301	76,095	66,312
Capability Utilization Rate	77.7	77.8	83.7	73.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 95.50	$ 90.17	$ 90.17	$ 74.17
No. 2 bundles	$ 62.50	$ 62.83	$ 61.17	$ 53.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$108.50	$102.50	$102.50	$ 76.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	78.50
No. 1 steel, Chicago	98.50	88.50	88.50	67.50
No. 1 bundles, Detroit	96.50	91.50	91.50	68.50
Low Phos., Youngstown	106.50	96.50	96.50	70.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	89.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	117.50
No. 1 mach'y cast., Chi	127.50	127.50	124.50	112.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective August 3, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	86.00-88.50	86.00-88.00	8/ 3/81
Lead	42.00-44.00	42.00-	7/29/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	46.25	45.25-46.25	5/ 6/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$392.50
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$435-$440
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$9.35
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$8.55
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

July 27—635.98
July 28—635.99
July 29—610.41
July 30—611.15
July 31—639.91

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	78½	69¼
Yellow brass	68¼	63⅛
Red brass	72⅞	66⅜
Comm. bronze	74⅜	67⅜
Mang. bronze	67½	65¾
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	67
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71	
No. 2 copper wire	63	
Light copper	53	
No. 1 composition	69	
No. 1 comp. turnings	67	
Hvy. yellow brass solids	43	
Hvy. yellow brass turnings	30	
Radiators	52	
Aluminum		
New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	37	—38
Mixed L.C. clips	29	—30
Old sheets and cast	22	—23
Boring and turnings	19	—20
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	49	—50
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	15	—16
Whole batteries	7	— 8
Type metal	16	—17
Electrotype	29	—30
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	12	—13

EFFECTIVE AUGUST 3, 1981

MATERIALS NEWSFRONT

(Effective August 3, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$108.00 to	$109.00
No. 2 hvy. melting	92.00 to	95.00
No. 1 dealer bundles	126.00 to	127.00
No. 1 factory bundles (auto)	127.00 to	128.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	126.00 to	127.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	129.00 to	130.00
Heavy turnings	92.00 to	95.00
No. 1 RR hvy. melting	119.00 to	120.00
Rails, 2 ft. and under	129.00 to	130.00
Scrap rails, random lgth.	113.00 to	114.00
RR specialties	128.00 to	129.00
No. 1 machinery cast	94.00 to	95.00
Cupola cast	87.00 to	88.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	690.00 to	700.00
18-8 turnings	590.00 to	600.00

Chicago

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	110.00 to	111.00
No. 1 factory bundles (auto)	117.00 to	118.00
No. 2 dealer bundles	68.00 to	69.00
Unburned bundles	64.00 to	65.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	47.00 to	48.00
Mixed bor. and turn.	48.00 to	49.00
Shoveling turnings	51.00 to	52.00
Cast iron borings	68.00 to	69.00
Low phos. forge crop	121.00 to	122.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to	132.00
Low phos. 2 ft. and under	125.00 to	126.00
No.1 RR hvy. melting	102.00 to	103.00
Scrap rails, random lgth.	99.00 to	100.00
Reroller rails	129.00 to	130.00
Rails, 2 ft. and under	131.00 to	132.00
RR couplers and knuckles	124.00 to	125.00
RR car axles	179.00 to	180.00
No. 1 machinery cast	127.00 to	128.00
Cupola cast	104.00 to	105.00
Stove plate	102.00 to	103.00
Steel car wheels	108.00 to	109.00
Stainless		
18-8 bundles and solids	655.00 to	665.00
18-8 turnings	530.00 to	540.00
430 bundles and solids	150.00 to	160.00
430 turnings	80.00 to	85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to	$ 81.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	110.00 to	113.00
No. 2 dealer bundles	53.00 to	56.00
No. 1 busheling	104.00 to	107.00
Shredder scrap	88.00 to	91.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	54.00 to	57.00
Clean cast chemical borings	66.00 to	69.00
Low phos. 5 ft. and under	100.00 to	103.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	118.00 to	121.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	120.00 to	123.00
Cupola cast	79.00 to	82.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to	$ 77.00
No. 2 hvy. melting	74.00 to	75.00
No. 1 dealer bundles	96.00 to	97.00
No. 2 bundles	45.00 to	46.00
No. 1 busheling	95.00 to	96.00
Drop forge flashings	74.00 to	75.00
Machine shop turn.	34.00 to	35.00
Mixed borings and turn.	30.00 to	31.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	44.00 to	45.00
Heavy breakable cast	61.00 to	62.00
Mixed cupola cast	79.00 to	80.00
Automobile cast	104.00 to	105.00
Stainless		
18-8 bundles and solids	610.00 to	620.00
18-8 turnings	460.00 to	470.00
430 bundles and solids	135.00 to	145.00

Youngstown

No. 1 hvy. melting	$109.00 to	$110.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	112.00 to	113.00
No. 2 dealer bundles	63.00 to	64.00
Machine shop turnings	19.00 to	20.00
Shoveling turnings	29.00 to	30.00
Low phos. plate	106.00 to	107.00
Electric furnace bundles	106.00 to	107.00
Galvanized bundles	93.00 to	94.00

Cleveland

No. 1 hvy. melting	$ 98.00 to	$ 99.00
No. 2 hvy. melting	66.00 to	67.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles	116.00 to	117.00
No. 2 bundles	55.00 to	56.00
No. 1 busheling	106.00 to	107.00
Machine shop turn.	25.00 to	26.00
Mixed bor. and turn.	25.00 to	26.00
Shoveling turnings	29.00 to	30.00
Cast iron borings	25.00 to	26.00
Cut structural & plates, 2 ft. and under	130.00 to	131.00
Low phos. punchings plate	130.00 to	131.00
Drop forge flashings	66.00 to	67.00
Foundry steel, 2 ft. & under	101.00 to	102.00
No. 1 RR hvy. melting	110.00 to	111.00
Rails, 2 ft. and under	129.00 to	130.00
Rails, 18 in. and under	130.00 to	131.00
Steel axle turnings	71.00 to	72.00
Railroad cast	115.00 to	116.00
No. 1 machinery cast	115.00 to	116.00
Cupola cast	105.00 to	106.00
Stove plate	80.00 to	81.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No.1 hvy. melting	$ 62.00 to	$ 63.00
No. 2 hvy. melting	50.00 to	51.00
No. 1 busheling	69.00 to	70.00
No. 1 dealer bundles	67.00 to	68.00
No. 2 dealer bundles	39.00 to	40.00
Machine shop turn.	12.00 to	13.00
Mixed bor. and turn.	21.00 to	22.00
Shoveling turnings	23.00 to	24.00
Cast iron borings	21.00 to	22.00
Low phos. plate	90.00 to	91.00
Structural and plate, 2 ft. and under	98.00 to	99.00
Rails, 2 ft. and under	76.00 to	77.00
Scrap rails, random lgth.	56.00 to	57.00
No. 1 machinery cast	96.00 to	97.00
No. 1 cupola cast	64.00 to	65.00

St. Louis

No. 1 hvy. melting	$ 93.00 to	$ 94.00
No. 2 hvy. melting	83.00 to	84.00
Foundry steel, 2 ft.	83.00 to	84.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	78.00 to	79.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	93.00 to	94.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 91.00 to	$ 92.00
No. 2 heavy melting	83.00 to	84.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	90.00 to	91.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	91.00 to	92.00
Elec. furnace, 3 ft. & under	83.00 to	84.00
Structural and plate, 2 ft.	109.00 to	110.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	91.00 to	92.00
Scrap rails, random lgth.	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
Angles and splice bars	99.00 to	100.00
No. 1 cupola cast	98.00 to	99.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 82.00 to	$ 83.00
No. 2 hvy. melting	78.00 to	79.00
No. 1 dealer bundles	104.00 to	105.00
No. 2 bundles	53.00 to	54.00
Machine shop turn.	17.00 to	18.00
Shoveling turnings	30.00 to	31.00
Cast iron borings	30.00 to	31.00
Low phos. 18 in. and under	112.00 to	113.00
Rails, random length	93.00 to	94.00
Rails, 2 ft. and under	115.00 to	116.00
No. 1 cupola cast	76.00 to	77.00
Heavy breakable cast	40.00 to	41.00
Drop broken cast	103.00 to	104.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	625.00 to	635.00
18-8 turnings	500.00 to	520.00
430 prepared solids	120.00 to	130.00
410 solids	110.00 to	120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 62.00 to	$ 64.00
No. 2 hvy. melting	54.00 to	56.00
No. 1 dealer bundles	77.00 to	79.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	77.00 to	79.00
Shredder scrap	76.00 to	78.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	18.00 to	20.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	56.00 to	58.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to	$ 54.00
No. 2 hvy. melting	44.00 to	46.00
No. 1 dealer bundles	39.00 to	41.00
No. 2 dealer bundles	24.00 to	26.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to	$ 52.00
No. 2 hvy. melting	39.00 to	41.00
No. 1 dealer bundles	37.00 to	39.00
No. 2 dealer bundles	20.00 to	22.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to	116.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 89.00 to	$ 91.00
No. 2 hvy. melting	78.00 to	80.00
No. 2 bundles	65.00 to	67.00
No. 1 cupola cast	112.00 to	114.00
Mixed yard cast	102.00 to	104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 80.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	83.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 98.00 to	$100.00
No. 2 hvy. melting	89.00 to	91.00
No. 2 bundles	58.00 to	60.00
Machine shop turn.	18.00 to	20.00
Crushed turnings	40.00 to	42.00
Shredder scrap	98.00 to	100.00
Cut structural plate 2 ft. and under	117.00 to	118.00
Unstripped motor blocks	80.00 to	82.00
Cupola cast	96.00 to	98.00

EFFECTIVE AUGUST 10, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	245	268	270	195
Buffalo	73	70	74	46
Pittsburgh	386	395	378	266
Youngstown	127	128	113	62
Cleveland	165	152	189	114
Detroit	176	175	167	93
Chicago	566	568	573	333
Cincinnati	102	90	110	84
St. Louis	77	88	91	44
Southern	218	224	249	183
Western	135	140	165	108
U.S. Production	2,270	2,298	2,379	1,528

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective August 10, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,270	2,298	78,365	67,869
Capability Utilization Rate	76.8	77.7	83.5	72.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.736
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 95.50	$ 95.50	$ 90.17	$ 75.50
No. 2 bundles	$ 62.50	$ 62.50	$ 61.17	$ 53.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$108.50	$108.50	$102.50	$ 77.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	81.50
No. 1 steel, Chicago	98.50	98.50	88.50	67.50
No. 1 bundles, Detroit	97.50	96.50	91.50	68.50
Low Phos., Youngstown	106.50	106.50	96.50	70.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	89.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	119.50
No. 1 mach'y cast., Chi	127.50	127.50	124.50	115.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

* * Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

* * * Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective August 10, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	86.00-88.00	86.00-88.50	8/ 4/81
Lead	43.00-46.00	44.00-45.00	8/ 4/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz	$393.75
Indium, 99.9%, troy oz	$6.75-$7.75
Iridium, dollars per troy oz	$600
Magnesium sticks, 10,000 lb	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$435-$442
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$8.60
Vanadium	$8.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Aug. 3—Holiday
Aug. 4—Holiday
Aug. 5—641.18
Aug. 6—638.88
Aug. 7—640.03

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	71	65⅞
Red brass	76⅜	69⅞
Comm. bronze	78	71
Mang. bronze	69¾	68
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	67
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	63
Light copper	53
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	34 —35
Old sheet	31 —32
Old cast	31 —32
Clean dry borings	32 —33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	37 —38
Mixed L.C. clips	29 —30
Old sheets and cast	22 —23
Boring and turnings	19 —20
Duraluminum clippings	38 —39

Copper and Brass

No. 1 copper wire	62 —63
No. 2 copper wire	52 —53
Light copper	49 —50
Radiators	42 —43
No. 1 composition	56 —57
No. 1 composition turn'gs	54 —55
Cocks and faucets	39 —40
Clean heavy yellow brass	34 —35
Brass pipe	39 —40
New soft brass clippings	49 —50
Yellow brass rod ends	42 —43

Lead

Heavy soft lead	17 —19
Whole batteries	7 — 8
Type metal	18 —19
Electrotype	30 —31

Nickel

Nickel solids	160 —175
Nickel rod ends	160 —175
Nickel sheets, clips	160 —175
Nickel turnings	110 —115

Zinc

New zinc clippings	19 —20
Old diecast zinc	13 —14

EFFECTIVE AUGUST 10, 1981

MATERIALS NEWSFRONT

(Effective August 10, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$108.00 to $109.00
No. 2 hvy. melting	92.00 to 95.00
No. 1 dealer bundles	126.00 to 127.00
No. 1 factory bundles (auto)	127.00 to 128.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	126.00 to 127.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	92.00 to 95.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	129.00 to 130.00
Scrap rails, random lgth.	113.00 to 114.00
RR specialties	128.00 to 129.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	690.00 to 700.00
18-8 turnings	590.00 to 600.00

Chicago

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	110.00 to 111.00
No. 1 factory bundles (auto)	117.00 to 118.00
No. 2 dealer bundles	68.00 to 69.00
Unburned bundles	64.00 to 65.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	125.00 to 126.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	99.00 to 100.00
Reroller rails	129.00 to 130.00
Rails, 2 ft. and under	131.00 to 132.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	104.00 to 105.00
Stove plate	102.00 to 103.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	655.00 to 665.00
18-8 turnings	530.00 to 540.00
430 bundles and solids	150.00 to 160.00
430 turnings	80.00 to 85.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	110.00 to 113.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	89.00 to 92.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	100.00 to 103.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	79.00 to 82.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	75.00 to 76.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Drop forge flashings	74.00 to 75.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	610.00 to 620.00
18-8 turnings	460.00 to 470.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$109.00 to $110.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	112.00 to 113.00
No. 2 dealer bundles	63.00 to 64.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	106.00 to 107.00
Electric furnace bundles	106.00 to 107.00
Galvanized bundles	93.00 to 94.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	66.00 to 67.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles	116.00 to 117.00
No. 2 bundles	55.00 to 56.00
No. 1 busheling	106.00 to 107.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	130.00 to 131.00
Low phos. punchings plate	130.00 to 131.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	90.00 to 91.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 82.00 to $ 83.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	104.00 to 105.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	112.00 to 113.00
Rails, random length	93.00 to 94.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	103.00 to 104.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	625.00 to 635.00
18-8 turnings	500.00 to 520.00
430 prepared solids	120.00 to 130.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 62.00 to $ 64.00
No. 2 hvy. melting	54.00 to 56.00
No. 1 dealer bundles	77.00 to 79.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	77.00 to 79.00
Shredder scrap	76.00 to 78.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	78.00 to 80.00
No. 2 bundles	65.00 to 67.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 84.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	87.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	89.00 to 91.00
No. 2 bundles	58.00 to 60.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	98.00 to 100.00
Cut structural plate 2 ft. and under	117.00 to 118.00
Unstripped motor blocks	80.00 to 82.00
Cupola cast	96.00 to 98.00

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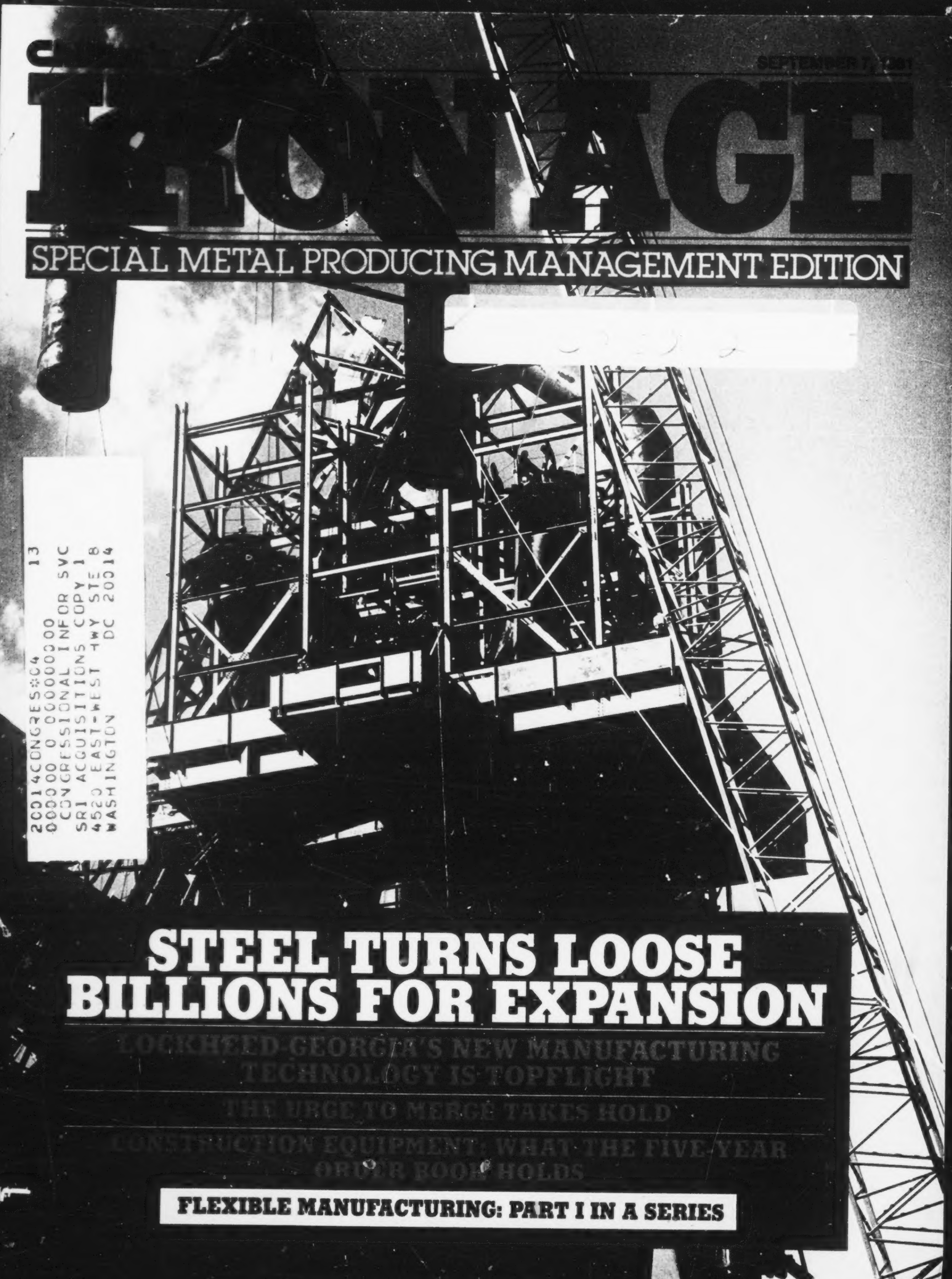
1981



SEPTEMBER 7, 1981

IRON AGE

SPECIAL METAL PRODUCING MANAGEMENT EDITION

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STEEL TURNS LOOSE BILLIONS FOR EXPANSION

LOCKHEED-GEORGIA'S NEW MANUFACTURING TECHNOLOGY IS TOPFLIGHT

THE URGE TO MERGE TAKES HOLD

CONSTRUCTION EQUIPMENT: WHAT THE FIVE-YEAR ORDER BOOK HOLDS

FLEXIBLE MANUFACTURING: PART I IN A SERIES

IRON AGE

VOL. 224, NO. 25

SEPTEMBER 7, 1981

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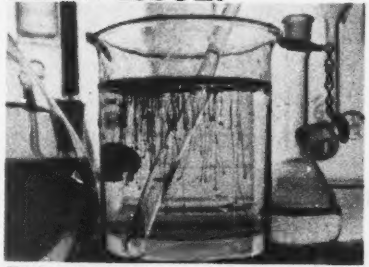


Fitting technology to the business

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089
Printed in Canada.

WHY CHROMIUM IS THE MOST CRITICAL OF ALL METALS

The chromium business is booming. Supply is plentiful and the price is right. But, what will happen in the event of a disruption?

By Robert R. Irving and Karen R. Moldt

As far as resources are concerned, the United States is rich in coal and molybdenum, but we are net importers in practically everything else. When it comes to manganese, cobalt, bauxite and chromium, we are a few points away from being totally dependent on foreign countries for supplies.

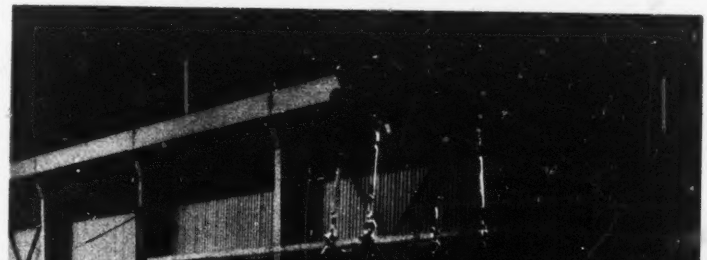
There have been many headlines and even a TV documentary on this subject. The United States is just not in the enviable position of such countries as Canada, Australia, Brazil and the Republic of South Africa in terms of critical materials.

No matter how you look at it, no metal is more important to the economy than chromium. The importance of chromium was stressed in a recent MacNeil-Lehrer report as follows: "In World War II it wasn't the shortage of oil that halted the Nazi war machine. What they ran out of was chromium."

The popular 52100 steel for bearings only contains about 1.5 pct chromium, but if there is no chromium, then there are no bearings and transportation comes to a screeching halt.

The way the world is going, it is very difficult to predict what will happen next in any nation. Fortunately, the United States is the world's best customer for chromium and that fact should bode well for the future.

The main bread-basket of chromium is located in two countries: South Africa and Zimbabwe (formerly Rhodesia). How stable are these countries? Also of concern is the price of chromium. At present it's a real bargain. Its price has not escalated like cobalt and molybdenum. But, how would a sharp price increase affect our economy?



The sodium pumps for the Clinch River fast breeder reactor plant feature parts fabricated from chromium-rich Types 304 and 316 stainless.

Because everything has been moving along smoothly, our materials community has not paid too much attention to chromium. As a result, we will not be prepared to meet any kind of emergency. The wheels are beginning to turn, however, and we are showing signs of recognizing the potential gravity of the situation.

America's chromium dependency is an "eternal dilemma," according to Robin Brumwell, executive vice president of the Mineral Resources Division, Cabot Corp., New York. The division was formed in 1980 to help assure reliable supplies of metals and minerals for Cabot's other divisions.

As protection against possible chromium supply disruptions, Cabot has adopted a stockpile strategy. Although it's not likely that all chromium supplies would go down at one time, the Cabot executive says, it's possible that half the world supply could be cut off because of internal problems in South Africa.

Cabot chose the stockpile route because the corporation didn't see any point in buying a mine in an unstable area and because chromium doesn't lend itself to reclamation, says Mr. Brumwell.

"It's worth spending 'X millions of dollars' to have a year's supply or whatever is considered a safe supply," he says.

Stockpiling involves both obtaining the raw materials and making arrangements to convert those materials when they are needed.

Chromium comes in various forms, the cheapest of which is chromite; it currently sells for about 30¢ per lb. The most expensive form is chrome metal which has been carrying a price tage of $3 to $4 per lb.

"It would make more sense to stockpile the cheap form if you can process it into chrome metal when needed," Mr. Brumwell points out.

The Mineral Resources Division is now studying possible conversion requirements and the amount of chromium to be stockpiled. Mr. Brumwell notes there is "an enormous problem" with the government's chromium stockpile because most of that supply is in the form of the raw ore, chromite.

"This ore is no good unless you convert it to ferrochrome," he explains. Therein lies another problem because the American ferrochrome industry is being forced out of business by the South African ferrochrome industry.

The government, Mr. Brumwell says, must be convinced to convert the chromite to ferrochrome and then stock only ferrochrome. One possible solution is to have domestic ferrochrome producers process the existing chromite.

"There's plenty of chromium available and there's no problem now or in the future as long as Zimbabwe and South Africa continue to produce chromium at current rates," says John Crane, communications manager for the Metals Division of Union Carbide Corp., New York.

He points out that Union Carbide has made a long-term commitment in Zimbabwe by installing two additional furnaces to a chromium smelter and expanding a mine to supply the new furnaces.

According to a study published in 1978 by the National Materials Advisory Board (NMAB), about 30 pct of domestic usage of chromium could be saved by functionally acceptable chromium-free substitutes.

Four percent could be saved after a short development period, while an additional 30 pct could be saved after an intermediate term research program of 5 to 10 years. However, the NMAB noted that 35 pct of the chromium usage was irreplaceable.

Over the past decade, chromium consumption in the United States has doubled and, according to the Bureau of Mines, it can be expected to double again by the year 2000.

Metallurgically, what is being done to cope with some kind of disruption?

A recent government-sponsored workshop on conservation and substitution technology for critical materials at Vanderbilt University in Nashville, Tenn., addressed the problem. The objective of this workshop was to provide input for a report on materials needs that the Secretary of Commerce will present to Congress later this month.

The report is part of the requirements specified by the recently enacted National Materials Policy, Research and Development Act of 1980.

At the workshop, Ralph M. Davison, director of metallurgical development, Climax Molybdenum Co., Ann Arbor, Mich., said: "It is difficult to overstate the importance of chromium as an alloy addition and the economic disruption that would accompany an interruption of chromium supply.

What effect would a chromium cartel, master-minded by the Soviet Union, have on our economy?

"But the dependence on chromium," added Dr. Davison, "is so broad economically that substitutes must be developed if the nation is to realize political freedom of action."

Since the largest single market for chromium is stainless steel, both manganese-aluminum and iron-aluminum alloys are being considered as possible substitutes.

Then, there are the chrome-moly steels, the workhorse materials of the power industry. A material like 2¼Cr-1Mo steel was only accepted after years of accumulated data. The ASME code required it.

"Where the code is enforced," Dr. Davison noted, "you just don't come up with a substitute overnight."

Ten percent of all chromium consumed in this country goes into the alloy steels used in gears and shafts. These are the 4600 and 8600 series of steels. Other steels have been developed to replace these grades, but, at the moment, the newly developed steels are more expensive.

As far as critical materials are concerned, chromium is still a real bargain, but how much longer will that condition exist? Suppose the Soviet Union is successful in talking certain other chromium-producing nations into forming a chromium cartel. What then?

Substitution, of course, is much more than replacing a chromium-bearing steel with a material containing no chromium. There is also the opportunity to develop alloys having less chromium than the ones they are replacing.

An example is a new alloy developed by the engineers at the Oak Ridge National Laboratories and Combustion Engineering. A modified 9Cr-1Mo steel, this material is intended to replace austenitic stainless steels in future reactors and piping systems where higher temperatures will be experienced.

In comparing this new steel with Type 304 stainless, there is an obvious 50 pct reduction in chromium content. But, how do the mechanical properties compare?

According to J. E. Cunningham, associate director of Oak Ridge's Metals and Ceramics Division, the comparison is most favorable toward the modified 9Cr-1Mo steel.

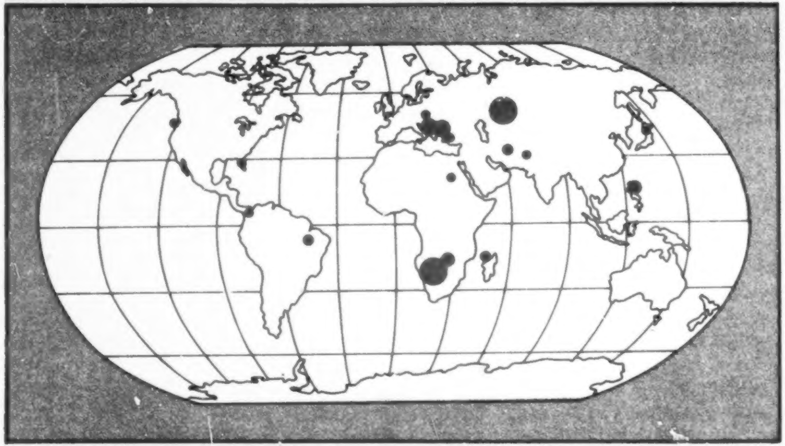
While much can be accomplished through alloy development, there is still another area worth investigating. In this country a veritable dearth of alloys has been developed over the years and many solutions to future chromium problems can be solved by examining many of these "old alloys."

At the Vanderbilt workshop, R. J. Johnson, manager, sales development, The International Nickel Co., Inc., New York, claimed: "Our analysis indicates that it would be possible technically to substitute nickel-containing materials such as Monel for a substantial tonnage of stainless steel.

"Similarly, much of the chromium in alloy steels," he added, "could be replaced by nickel, perhaps augmented by increased manganese or molybdenum. Most of the chromium for plating other metals could also be saved through the use of alternative nickel plating systems."

The producers and users of superalloys are pushing hardest for solutions to the chromium dilemma. This is the case despite the fact that only 3 pct of the chromium consumed in this country goes into superalloys. Nevertheless, it is an essential element in most of these materials.

There were times when superalloys were strictly thought to be jet engine materials, but the market for superalloys is expanding rapidly. Superalloys are now beginning to find their way into many of the newer, emerging industries such as in sour gas wells, coal conversion plants, utility scrubbers, fast breeder reactors and even fusion reactors.



The Soviet Union and Turkey do have chromium, but 95 pct of the world resources are located in the Republic of South Africa and in Zimbabwe.

World Chromite Ore Resources

Thousand short tons shipping ore, gross weight[1]

	Reserves	Other resources	Total	Type[2]
Western Hemisphere:				
United States	—	11,000	11,000	High iron
Brazil	2,200	22,000	24,200	High iron
Canada	—	11,000	11,000	High iron
Cuba	3,300	11,000	14,300	High aluminum
Greenland	—	11,000	11,000	High iron
Hemisphere total	**5,500**	**66,000**	**71,500**	
Eastern Hemisphere:				
Albania	2,200	17,000	19,200	High chromium
Finland	28,000	55,000	83,000	High iron
India	5,500	28,000	33,500	High chromium
Iran	2,200	11,000	13,200	High chromium
Madagascar	2,200	11,000	13,200	High chromium
Philippines	3,300	22,000	25,300	High aluminum
South Africa, Republic of	2,500,000	22,000,000	24,500,000	High iron
Turkey	5,500	22,000	27,500	High chromium
U.S.S.R.	17,000	100,000	117,000	High chromium
Zimbabwe	1,100,000	10,000,000	11,100,000	High chromium
Hemisphere total[3]	**3,700,000**	**32,000,000**	**35,900,000**	
Other world	2,200	11,000	13,200	High chromium
World total[3]	**3,700,000**	**32,000,000**	**36,000,000**	

[1] Derived in consultation with the U.S. Geological Survey. [2] Predominant type ore in country. Some countries have some quantities of all three types. [3] Data may not add to totals shown because of rounding.

Concerned about the cost of the gas turbine engine, the Air Force is funding programs aimed at scrap reclamation. It has been pointed out that 7 out of every 10 lbs of highly alloyed material purchased for a military engine ends up in the scrap heap.

Under Air Force funding, Air Products and Chemicals, Inc., Allentown, Pa., demonstrated that Waspaloy, a high alloy containing about 19.5 pct chromium, could be reclaimed successfully from sludge-type scrap.

According to an Air Force source, there are 1656 lbs of chromium in every engine on the F-100 fighter aircraft. That probably means that more than twice that weight has ended up as scrap during the manufacturing cycle.

Conservation is another area well worth investigating. One way to improve conservation is to encourage industry to pay closer attention to the near net shape philosophy. Such relatively new methods as hot or cold isostatic pressing, isothermal forging and rapid solidification technology all fit this mold. The objective here is the reduction if not elimination of scrap.

Then, in instances where the surface of the product is the area of concern, why not modify the surface only and build the rest of the product out of a less expensive material. In many plate products, the critical surface can be protected from the effects of corrosion and oxidation by stainless cladding while the main body of the product could be made from carbon steel.

On smaller parts, there are processes like ion implantation which can be used to apply discrete deposits of chromium on the surface.

Within the past decade, the catalytic converter has become standard equipment on all automobiles sold in the United States. When this work first began, Type 409 steel was specified as the material of construction. The auto industry is constantly searching for more cost-effective materials, but Type 409 contains 11 pct chromium.

If some non-chromium-bearing material could be located as a substitute material for the catalytic converter, then huge quantities could be released for other applications. No single application area has contributed so much to our chromium consumption during the past decade than has the catalytic converter for the automobile.

In summary, in order to face up to the potential chromium situation, the United States has the following alternatives:

1) We can wait for a crisis to develop and then react accordingly; or

2) We can prepare for the worst.

Allen G. Gray, the technical director of the American Society for Metals, Metals Park, Ohio, and chairman of the recent workshop at Vanderbilt University, opts for the latter course of action.

In his keynote address at the Vanderbilt meeting, Dr. Gray said: "The message is clear that the time to start to develop these technologies for improved materials performance and processing, substitutions, conservation, coatings systems and reclamation is now."

Don't we have any chromite resources in this country? you ask.

Yes, we do but, according to the Bureau of Mines, it's not competitive with foreign ore due to its small size, low grade and distance from consuming plants. Some 80 pct of our resource is in the Stillwater complex in Montana, an area 30 miles long.

For that reason, a concentrated research effort is in order. ☐

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METALWORKING PRICE TRENDS

Inflation-cooling carries a high price tag

This year, it seems, as the weather got hotter, prices got cooler.

The latest data on producer prices shows that the cooling process ran at least through July—and appears to have continued as it went on from that point.

July marked the fourth straight month of decreasing gains in producer prices as measured on a year-to-year basis. In July, these prices rose by 8.8 pct. In March, they had gone up by 10.8 pct, in April by 10.6 pct, in May by 10.5 pct and in June by 10.2 pct.

Producer prices in metalworking product lines, cooling in recent months, seem to have hit some kind of a bottom in July.

On a year-to-year basis, the average price increase for the 23 metalworking product lines shown on the table here came to 10.1 pct. That is just what it came to in each of the three previous months. Still, it was well below the 11.4 pct average price advance in the opening two months of the year.

On a month-to-month basis, there were mixed signs in July along the metalworking price front. This mix ranged from .2 pct for autos and heavy trucks to 3.9 pct for ball and roller bearings.

Other product lines sharing in the price slowdown included agricultural machinery, generators and mining machinery.

Capital equipment has shown one of the sharpest price cooling trends in the recent inflationary retreat. In January and February of this year, capital goods prices on an annual basis, rose by 13.2 pct. In the most recent two-month period—June and July—these prices rose by only 8.4 pct.

What's behind all the price cooling?

Well, recently, an economist was asked, "Who would have guessed that prices would cool so sharply?" His answer: "Only those who foresaw that the economy would slow down so sharply."

Following two periods of solid economic growth in the fourth quarter last year and the first quarter this year, a minus 2.4 pct rate hit in the second period. This growth turndown slowed inflation from a 10.7 pct rate in the fourth quarter last year to a 6.0 pct rate in the second quarter this year.

Latest Month Covered: July, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	345.7	+ .6	+ 9.2
Metal Forming Machine Tools	379.4	+ .4	+ 7.5
Agricultural Machinery & Equip	287.3	+ .5	+11.1
Construction Machinery & Equip	324.0	+ 1.3	+11.1
Special Industry Mach. & Equip	311.0	+ .6	+12.4
Industrial Process Furnace & Ovens	332.2	+ .3	+11.3
Industrial Material Handling Equip	279.0	+ .8	+ 9.5
Pumps, Compressors & Allied Equip	326.2	+ 1.1	+13.1
Fluid Power Equip	223.6	+ 1.4	+11.2
Mechanical Power Transmission Equip	299.1	+ 2.1	+12.9
Automobiles	205.8	+ .2	+ 7.9
Motor Trucks—Light	250.1	+ .6	+13.5
Motor Trucks—Heavy	283.6	+ .2	+13.8
Railroad Equipment	344.3	+ 2.0	+ 8.8
Fabricated Metal Structural Products	298.3	+ 1.0	+ 9.5
Electric Motors	274.5	+ 1.2	+ 7.9
Valves & Fittings	310.4	+ .5	+ 6.3
Ball & Roller Bearings	305.8	+ 3.9	+13.2
Cutting Tools & Accessories	260.9	+ 1.3	+ 9.09
Heating Equipment	225.7	+ 1.3	+ 9.5
Plumbing Fixtures & Brass Fittings	270.3	+ .6	+ 8.2
Metal Containers	315.7	+ .5	+ 4.2
Miscellaneous Metal Products	275.0	+1.7	+ 9.5

Data based on U.S. Labor Dept.'s Producer Price Index

EFFECTIVE AUGUST 17, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	244	245	265	188
Buffalo	68	73	70	44
Pittsburgh	401	386	383	294
Youngstown	133	127	113	79
Cleveland	170	165	160	111
Detroit	166	176	166	92
Chicago	536	566	550	353
Cincinnati	112	102	94	76
St. Louis	82	77	76	48
Southern	221	218	247	186
Western	141	135	152	110
U.S. Production	2,274	2,270	2,276	1,581

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81

Steel Production, Composite Prices

(Effective August 17, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,274	2,270	80,639	69,435
Capability Utilization Rate	76.9	76.8	83.3	72.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 95.50	$ 95.50	$ 90.17	$ 76.50
No. 2 bundles	$ 62.50	$ 62.50	$ 61.17	$ 54.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$108.50	$108.50	$102.50	$ 77.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	84.50
No. 1 steel, Chicago	98.50	98.50	88.50	67.50
No. 1 bundles, Detroit	97.50	97.50	91.50	68.50
Low Phos., Youngstown	106.50	106.50	96.50	70.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	89.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	119.50
No. 1 mach'y cast., Chi	127.50	127.50	124.50	116.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective August 17, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	88.00-89.65	88.00-89.50	8/17/81
Lead	46.00	44.00-46.00	8/13/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) — cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz.	$411.50
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$435-$442
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.15
Vanadium	$6.42
Zirconium sponge	$10.00-$14.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Aug. 10—640.79
Aug. 11—643.03
Aug. 12—630.75
Aug. 13—641.92
Aug. 14—640.53

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	68
Light copper	59

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	64
Light copper	55
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	37	—38
Mixed L.C. clips	29	—30
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	64	—66
No. 2 copper wire	54	—55
Light copper	50	—51
Radiators	43	—44
No. 1 composition	57	—58
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	50	—51
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

AIR/WATER CLEAN-UP COSTS STUNT STEEL'S GROWTH

Study shows industry is spending $10.8 billion. More rigid requirements could boost total to $18.5 billion, pinch expansion and cause layoffs.

By Paul Cathey

Steelmakers will be able to clean up 96 pct of the industry's criteria air pollutants by the end of 1982—and by 1985 for those companies using the stretch-out legislation recently enacted by Congress.

By 1984 more than 98 pct of water pollutants can be removed when the industry's planned environmental programs are completed.

The capital costs of doing all this will raise the total for clean-up to about $10.8 billion by 1984. Additional clean-up requirements beyond those imposed by present deadlines could raise ultimate total costs for environmental control equipment to about $18.5 billion.

If additional authorized environmental requirements are imposed, they could then increase the steel industry's capital shortfall to a point where additional losses in production and shipment capability—and, in turn, major losses in jobs—could occur. Imports could then increase sharply, adding substantially to the nation's trade deficit.

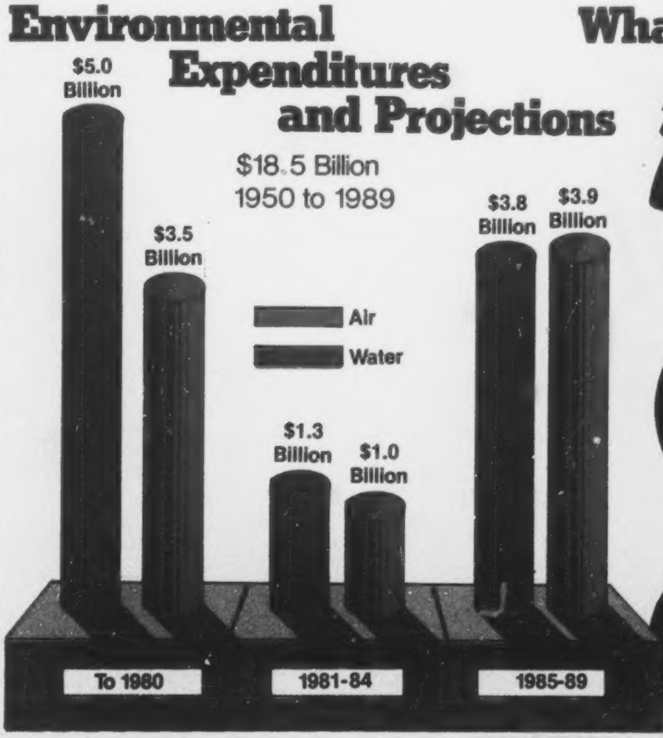
All the foregoing are conclusions reached in an Arthur D. Little, Inc. study—*Environmental Policy for the 1980s: Impact on the American Steel Industry.* The document, commissioned by the steel industry, represents more than a year of study of the industry by economists and engineers to determine the effects of expenditures on environmental equipment and operation.

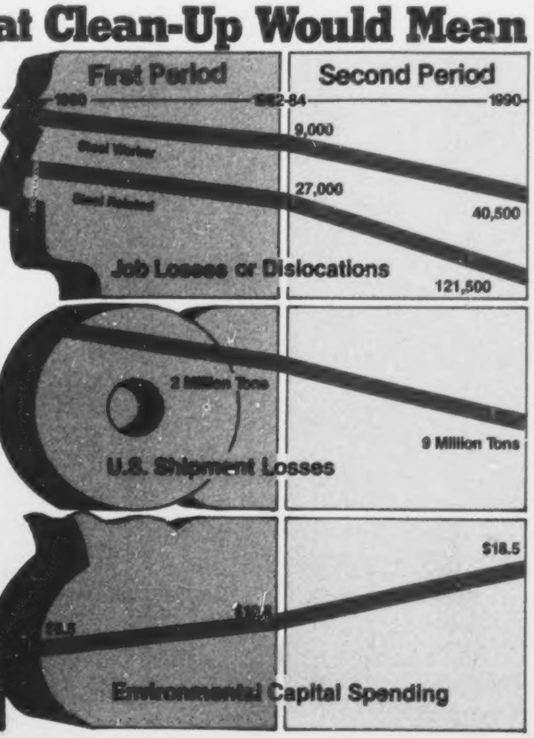
Says William J. De Lancey, chairman of the American Iron and Steel Institute (AISI) and also chairman and chief executive officer of Republic Steel Corp., "The report shows that the industry has already accomplished most of the clean-up job. It indicates that steel mills had $8.5 billion (in 1980 dollars) of pollution control equipment in place at the end of last year."

"The report," he continued, "provides estimates, documented by supporting data, of the effects of environmental compliance on the industry's financial capability to modernize, to produce and ship steel, and to maintain employment levels.

"The report shows clearly the industry has recognized its obligation to participate in the national environmental clean-up effort. But it also demonstrates that some balance is necessary between environmental goals and the urgent need to modernize the steel industry.

"Clearly," he concludes, "there are a number of problems caused by the environmental laws and their administrative interpretations which need





to be addressed promptly."

What Are Clean Air/Clean Water Acts?

The Clean Air Act establishes two principal objectives, the Arthur D. Little study notes.

The first related to primary air quality standards, provides for attainment by controlling certain "criteria" pollutants—sulfur oxides, total suspended particulates, carbon monoxide, photochemical oxidants, hydrocarbons and nitrogen dioxide—and in addition hazardous pollutants which may have "adverse effects on public health."

The second objective of the Clean Air Act is to attain secondary air quality standards to protect the "public welfare"; that is, standards that are not necessary to protect public health.

The Clean Water Act establishes two objectives. The first is aimed at controlling designated pollutants such as "conventional" pollutants (total suspended solids, oil and grease) and "other" pollutants (ammonia, phenol, cyanide, and designated toxic chemicals). The second objective of the Clean Water Act is the total elimination of effluents (zero discharge).

Discussing the impact of the program on the American steel industry Arthur D. Little has this to say, "In addition to capital costs, the annualized operating costs of pollution control equipment are a significant added cost.

"Annualized operating costs may be $3.19 billion by 1985 and may escalate to $6.8 billion annually by the end of '89 to meet current and projected future environmental requirements.

"Considering," it's added, "the steel industry's progress to date, it's difficult to quantify what improvements, if any, will come from future requirements imposed on industry. For example, it is well documented that such 'non-traditional' sources as unpaved roads, construction and agriculture account for 20 times as much particulate emissions as all industry sources, yet regulatory efforts are directed primarily at industry."

The ADL goes on to point out, while the benefits of projected future requirements at best are debatable, the cost to the industry could exceed all the capital spent to date.

"For a steel industry already troubled," says the ADL study, "additional environmental costs pose a threat to the existence of many marginally economic facilities and thus endanger the many thousands of jobs they provide."

The study then details (see chart) some of the potential impacts largely attributable to future environmental expenditures. These include:

—Two million tons of annual shipments could be lost by 1984 as a result of the diversion of much-needed capital to meet remaining (first-period to 1984) environmental requirements.

—Seven million tons more could be lost if the industry is forced to meet projected future (second period) requirements between 1984 and 1990.

—A total of 9 million tons of annual shipments (in addition to losses of shipments due to other causes) could be lost in the decade.

—As many as 40,500 steelworker jobs could be lost and 121,500 more steel industry-related jobs could be lost or dislocated in the 1980s because of the decline in shipments resulting from the burden of environmental spending.

Adds ADL, "Diversion of scarce capital and operating funds from steel production to pay for pollution control devices may cause the steel industry to lose significant production capacity and jobs, but there are other far-reaching consequences to the industry and the nation."

The first of these mentioned is *imports*. "If environmental costs reduce domestic steel production as forecast, imports could rise an additional 9 million tons by 1989 to meet domestic requirements. This would add at least $4 billion to the nation's trade deficit.

"The nation would then depend on precarious foreign sources for over 30 pct of its steel—much as it now depends on OPEC for oil. The economic and national defense implications of this dependency are obvious."

The second mentioned is *energy*. "Current environmental regulations will cost the steel industry $510 million a year for energy, and consume the energy equivalent of 24 million barrels of oil annually. Compliance with projected future environmental requirements could cost another $1.3 billion a year for energy and consume the energy equivalent of over 63 million barrels of oil annually.

"Furthermore, the generation of energy needed to control steel industry pollution produces its own pollution, which may in some cases exceed pollution from the controlled source."

The last mentioned is *cost*. "In 1979, about $27 a ton was added to the cost of steel to pay for the operation and maintenance and capital charges for environmental control facilities (average price per ton of steel under $400). By 1989, the total cost may be $71 added to each ton of domestically produced steel as environmental costs soar."

The Arthur D. Little study concludes with this observation:

"The steel industry has been burdened by literally thousands of governmental regulations which have had a disastrous cumulative effect. Among those are excessive environmental regulations.

"The need for debate over the desirability of a clean environment is long past. The steel industry is committed to continued progress in environmental improvement. The steel industry has made enormous expenditures to assure that the environment surrounding its mills is protected. By and large, the money spent to date on pollution controls has resulted in considerable benefit to the public.

"As the industry confronts the potential additional burden of $10 billion to meet environmental requirements in the 1980s, it is time to re-examine national environmental policy and place it in its proper perspective.

"Rather than imposing additional costs with unacceptable economic consequences, the U.S. government should revise its policies to ensure acceptable environmental quality within a sound American economy."

In explained its methodology for the study, ADL notes three specific areas of study were undertaken.

First, an analysis of the performance of the steel industry up to 1979 in meeting the objectives of the Clean Air Act and the Clean Water Act.

Second, assessment of the capital and operating costs to the steel industry through the 1980s, of achieving full compliance with both current and projected future air and water pollution control requirements.

And third, estimation of the effects of current and projected future air and water regulation on steel shipments, employment, energy requirements and steel production costs.

All dollar figures, were stated in terms of 1980 base-year dollars. ☐

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MATERIALS NEWSFRONT

(Effective August 17, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$108.00 to $109.00
No. 2 hvy. melting	92.00 to 95.00
No. 1 dealer bundles	124.00 to 125.00
No. 1 factory bundles (auto)	127.00 to 128.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	125.00 to 126.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	129.00 to 130.00
Heavy turnings	92.00 to 95.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	129.00 to 130.00
Scrap rails, random lgth.	113.00 to 114.00
RR specialties	128.00 to 129.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	675.00 to 680.00
18-8 turnings	575.00 to 580.00

Chicago

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	110.00 to 111.00
No. 1 factory bundles (auto)	117.00 to 118.00
No. 2 dealer bundles	68.00 to 69.00
Unburned bundles	64.00 to 65.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	125.00 to 126.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	99.00 to 100.00
Reroller rails	129.00 to 130.00
Rails, 2 ft. and under	131.00 to 132.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	104.00 to 105.00
Stove plate	102.00 to 103.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	645.00 to 655.00
18-8 turnings	520.00 to 530.00
430 bundles and solids	140.00 to 150.00
430 turnings	75.00 to 80.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	110.00 to 113.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	89.00 to 92.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	100.00 to 103.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	79.00 to 82.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	75.00 to 76.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Drop forge flashings	74.00 to 75.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	610.00 to 620.00
18-8 turnings	460.00 to 470.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$109.00 to $110.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	112.00 to 113.00
No. 2 dealer bundles	63.00 to 64.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	106.00 to 107.00
Electric furnace bundles	106.00 to 107.00
Galvanized bundles	93.00 to 94.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	66.00 to 67.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles	116.00 to 117.00
No. 2 bundles	55.00 to 56.00
No. 1 busheling	106.00 to 107.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	130.00 to 131.00
Low phos. punchings plate	130.00 to 131.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 91.00 to $ 92.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	90.00 to 91.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	100.00 to 101.00
Rails, 18 in. and under	120.00 to 121.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 82.00 to $ 83.00
No. 2 hvy. melting	78.00 to 79.00
No. 1 dealer bundles	104.00 to 105.00
No. 2 bundles	53.00 to 54.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	112.00 to 113.00
Rails, random length	93.00 to 94.00
Rails, 2 ft. and under	115.00 to 116.00
No. 1 cupola cast	76.00 to 77.00
Heavy breakable cast	40.00 to 41.00
Drop broken cast	103.00 to 104.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	625.00 to 635.00
18-8 turnings	500.00 to 520.00
430 prepared solids	120.00 to 130.00
410 solids	110.00 to 120.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	52.00 to 54.00
No. 1 dealer bundles	75.00 to 77.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	75.00 to 77.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 89.00 to $ 91.00
No. 2 hvy. melting	78.00 to 80.00
No. 2 bundles	65.00 to 67.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 84.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	87.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	89.00 to 91.00
No. 2 bundles	58.00 to 60.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	98.00 to 100.00
Cut structural plate 2 ft. and under	117.00 to 118.00
Unstripped motor blocks	80.00 to 82.00
Cupola cast	96.00 to 98.00

EFFECTIVE AUGUST 24, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	263	244	258	188
Buffalo	55	68	68	44
Pittsburgh	389	401	402	294
Youngstown	137	133	123	79
Cleveland	168	170	173	111
Detroit	172	166	172	92
Chicago	591	536	563	353
Cincinnati	114	112	95	76
St. Louis	81	82	67	48
Southern	228	221	254	186
Western	143	141	144	110
U.S. Production	2,341	2,274	2,319	1,581

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective August 24, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,341	2,274	82,980	71,044
Capability Utilization Rate	79.2	76.9	83.2	71.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 94.83	$ 95.50	$ 90.17	$ 76.50
No. 2 bundles	$ 62.50	$ 62.50	$ 61.17	$ 54.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$106.50	$108.50	$102.50	$ 77.50
No. 1 steel, Philadelphia	79.50	79.50	79.50	84.50
No. 1 steel, Chicago	98.50	98.50	88.50	67.50
No. 1 bundles, Detroit	97.50	97.50	91.50	68.50
Low Phos., Youngstown	106.50	106.50	96.50	70.50
No. 1 mach'y cast., Pgh.	94.50	94.50	94.50	89.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	119.50
No. 1 mach'y cast., Chi.	127.50	127.50	124.50	116.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective August 24, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	86.50-88.00	87.00-88.15	8/24/81
Lead	42.00-46.00	44.00-46.00	8/20/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$422.00
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$440-$450
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.13
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Aug. 17—641.91
Aug. 18—639.99
Aug. 19—647.64
Aug. 20—661.05
Aug. 21—674.46

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	75
No. 2 copper wire	66
Light copper	57

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	62
Light copper	53
No. 1 composition	69
No. 1 comp. turnings	67
Hvy. yellow brass solids	43
Hvy. yellow brass turnings	30
Radiators	52

Aluminum

New mixed clips	34 —35
Old sheet	31 —32
Old cast	31 —32
Clean dry borings	32 —33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum	
Segregated clippings	37 —38
Mixed L.C. clips	29 —30
Old sheets and cast	22 —23
Boring and turnings	18 —19
Duraluminum clippings	38 —39
Copper and Brass	
No. 1 copper wire	64 —66
No. 2 copper wire	54 —55
Light copper	50 —51
Radiators	43 —44
No. 1 composition	57 —58
No. 1 composition turn'gs	55 —56
Cocks and faucets	40 —41
Clean heavy yellow brass	35 —36
Brass pipe	40 —41
New soft brass clippings	50 —51
Yellow brass rod ends	43 —44
Lead	
Heavy soft lead	17 —19
Whole batteries	7 — 8
Type metal	18 —19
Electrotype	30 —31
Nickel	
Nickel solids	160 —175
Nickel rod ends	160 —175
Nickel sheets, clips	160 —175
Nickel turnings	110 —115
Zinc	
New zinc clippings	19 —20
Old diecast zinc	13 —14

EFFECTIVE AUGUST 24, 1981

MATERIALS NEWSFRONT

(Effective August 24, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$106.00 to $107.00
No. 2 hvy. melting	93.00 to 94.00
No. 1 dealer bundles	124.00 to 125.00
No. 1 factory bundles (auto)	127.00 to 128.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	122.00 to 123.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	126.00 to 127.00
Heavy turnings	93.00 to 94.00
No. 1 RR hvy. melting	119.00 to 120.00
Rails, 2 ft. and under	129.00 to 130.00
Scrap rails, random lgth.	113.00 to 114.00
RR specialties	128.00 to 129.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	650.00 to 660.00
18-8 turnings	550.00 to 560.00

Chicago

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	110.00 to 111.00
No. 1 factory bundles (auto)	117.00 to 118.00
No. 2 dealer bundles	68.00 to 69.00
Unburned bundles	64.00 to 65.00
No. 1 busheling	102.00 to 103.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	47.00 to 48.00
Mixed bor. and turn.	48.00 to 49.00
Shoveling turnings	51.00 to 52.00
Cast iron borings	68.00 to 69.00
Low phos. forge crop	121.00 to 122.00
Low. phos. punchings plate ¼ in. and heavier	131.00 to 132.00
Low phos. 2 ft. and under	125.00 to 126.00
No.1 RR hvy. melting	102.00 to 103.00
Scrap rails, random lgth.	99.00 to 100.00
Reroller rails	129.00 to 130.00
Rails, 2 ft. and under	131.00 to 132.00
RR couplers and knuckles	124.00 to 125.00
RR car axles	179.00 to 180.00
No. 1 machinery cast	129.00 to 130.00
Cupola cast	104.00 to 105.00
Stove plate	102.00 to 103.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	620.00 to 630.00
18-8 turnings	520.00 to 530.00
430 bundles and solids	120.00 to 125.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 78.00 to $ 81.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	110.00 to 113.00
No. 2 dealer bundles	53.00 to 56.00
No. 1 busheling	106.00 to 109.00
Shredder scrap	89.00 to 92.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	100.00 to 103.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	79.00 to 82.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 77.00 to $ 78.00
No. 2 hvy. melting	75.00 to 76.00
No. 1 dealer bundles	97.00 to 98.00
No. 2 bundles	45.00 to 46.00
No. 1 busheling	96.00 to 97.00
Drop forge flashings	74.00 to 75.00
Machine shop turn.	34.00 to 35.00
Mixed borings and turn.	30.00 to 31.00
Shoveling turnings	34.00 to 35.00
Cast iron borings	44.00 to 45.00
Heavy breakable cast	61.00 to 62.00
Mixed cupola cast	79.00 to 80.00
Automobile cast	104.00 to 105.00
Stainless	
18-8 bundles and solids	610.00 to 620.00
18-8 turnings	450.00 to 470.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$109.00 to $110.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	112.00 to 113.00
No. 2 dealer bundles	63.00 to 64.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Low phos. plate	106.00 to 107.00
Electric furnace bundles	106.00 to 107.00
Galvanized bundles	93.00 to 94.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	66.00 to 67.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles	116.00 to 117.00
No. 2 bundles	55.00 to 56.00
No. 1 busheling	106.00 to 107.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	130.00 to 131.00
Low phos. punchings plate	130.00 to 131.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 88.00 to $ 89.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	88.00 to 89.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	101.00 to 101.00
Rails, 18 in. and under	120.00 to 121.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 79.00 to $ 80.00
No. 2 hvy. melting	75.00 to 76.00
No. 1 dealer bundles	101.00 to 102.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. 18 in. and under	109.00 to 110.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	73.00 to 74.00
Heavy breakable cast	37.00 to 38.00
Drop broken cast	100.00 to 101.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 prepared solids	110.00 to 120.00
410 solids	100.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	52.00 to 54.00
No. 1 dealer bundles	75.00 to 77.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	75.00 to 77.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 86.00 to $ 88.00
No. 2 hvy. melting	75.00 to 77.00
No. 2 bundles	63.00 to 65.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 84.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	87.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

NO. 1 hvy. melting	$ 98.00 to $100.00
No. 2 hvy. melting	89.00 to 91.00
No. 2 bundles	58.00 to 60.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	98.00 to 100.00
Cut structural plate 2 ft. and under	117.00 to 118.00
Unstripped motor blocks	80.00 to 82.00
Cupola cast	96.00 to 98.00

STEEL PRICES

Codes identify Producers listed in the Key on page 191. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. = Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$366.00
N4	$366.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), C10	$420.00
R3	$427.00
Midwest	
R3, U1, W5	$427.00
W8	$400.00
S1	$420.00
C10	$420.00
K2	$400.00
W5	$400.00
West	
B3	$430.00
C6	$420.00
South	
A7	$400.00
Alloy, East	
R3, C10	$463.00
B3	$459.00
Midwest	
W8, W5	$459.00
S1, U1	$459.00
R3	$463.00
West	
B3	$469.00
C6	$469.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	21.65
U1	21.65
Midwest	
A7, N4	21.65
J3, C20	21.65
W8	21.65
I3, T10, U1	21.65
West	
C6	22.85
J1	22.15
B3(2)	21.65
South	
A8, C16, U1	21.65
T10	21.65
High-Strength, Low Alloy, East	
B3(2)	21.65
U1	21.65
Midwest	
N4	21.65
W8	21.65
J3	21.65
U1	21.65
I3	21.65
West	
U1, A7	22.15
B3(2)	21.65
South	
U1, C16	21.65
Wide Flange, Carbon, East	
B3	21.65
U1, A7	21.65
Midwest	
U1	21.65
N4	21.65
I3	21.65
West	
U1	22.15
C6	21.90
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3(2), U1	20.80
J3	20.80
Midwest	
A7	18.45
D1	20.80
S1, J3, D1	20.80
W3	20.80
N4	17.50
W5	20.80
U1	20.80
B3, G2, I3, I4, M2, R3, J3, G3	20.80
West	
K1	20.00
B3	24.70
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
U1	33.25
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	33.25
J3	Cmp*
T4	Cmp*
West	
U1	33.25
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	20.80
A7	19.50
S1	20.80
I3	20.80
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	32.00
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.20
G4	25.80
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
S1	39.90
Midwest	
I4	41.75
S1	37.65

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	20.80
J3	20.80
U1	20.80
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	20.80
S1, W5, D1	20.80
J3	20.80
I4	19.50
West	
U1	21.30
K1	20.00
South	
R3	20.80
Cold-Rolled, East, Class I	
B3(2), U1	24.65
J3	24.65
Midwest	
B3, I3, G3, R3, M2, U1(2)	24.65
G2, W3, M11	24.65
I4	22.00
J3, A7	23.15
S1, W5, D1	24.65
West	
U1	25.15
South	
R3	24.65
Galvanized (hot-dipped), East	
B3(2)	27.15
Midwest	
J3, D1	27.15
I3, W5, S1	27.15
U1, A7, R3, Y1	26.25
G2, W3, M11	27.15
West	
K1	25.75
South	
U1	27.15
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	26.15
S1	26.50
Long-Terne, Midwest	
W5	28.30
A7, U1	27.75
R3	27.60

*Composite pricing

Wire Rod

East	
B3(2)	22.35
U1	22.35
Midwest	
A7, N4	22.35
U1	22.35
K2	22.35
J3	22.35
West	
C6	21.45
B3	23.25
U1	22.35
South	
G7	22.35

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	17.30
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	24.30
R5	23.95
B3(3), J3	23.95
U1, C10	23.95
Midwest	
A7, C20	23.95
N4	23.95
W8, U1, I3, I4	23.95
R3, T10	24.30
K2	23.95
West	
B3	23.95
C6	24.45
U1	23.95
B3	24.70
South	
A8	23.95
A7	23.95
C16	23.95
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	31.50
C21	21.15
J3, L2	30.00
C2	23.025
M9, W10, T11, S8	31.00
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	31.00
Midwest	
B5, W10, Y1, W8, R3	31.00
C2	24.675
B1	19.80
L2	30.75
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	31.25
West	
B5	31.20
B5	34.90
R3	31.20-34.90
South	
B5	32.85
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R5, K3, C10	26.10
R3	26.35
Midwest	
A7, U1	26.10
I3, C10, W8	26.10
R3	26.35
I4	24.85
J3	26.10
West	
B3	26.10
B5	18.50
C6	26.60
U1	26.10
B3	27.10
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	35.20
R3, N1, C2	35.40
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.75
T11, S8	34.85
C10	34.85
Midwest	
B5, R3, C10	34.85
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	34.65
B5	35.10
West	
R3	35.20-38.25
B5	35.20
B5	38.25
South	
S16	28.075
C16	28.00
B5	38.75

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	23.25
L4	23.25
P2	23.25
U1	23.25
J3	21.70
Midwest	
A7, B3, G3, R3, G2, S1	21.70
I3, U1, W8, I4, W5	21.70
J3	20.50
West	
A7	23.25
U1	23.25
B3	23.25
C6	23.25
O2	22.75
K1	23.50
South	
R3	23.25
A7	23.25
U1	23.25
Alloy, East	
J3	31.05
P2, U1	31.05
B3(2), L4	31.05
Midwest	
W8	23.025
B3	31.05
G2, G3	31.05
I4, U1	31.05
West	
B3	31.05
O2	30.55
K1	31.30
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	27.10
U1	27.70
A11	22.15
Midwest	
A7, R3	24.60
N4, W7	27.40
J3	25.95
K2	24.20
South	
U1	29.70
A8	22.85
West	
C6	24.95

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co. Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	**Bliss & Laughlin Steel Co., Harvey, Ill.**
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G O Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala
C20	Calumet Steel Div., Chicago Heights, Ill
C21	Cumberland Steel Co., Cumberland, Md
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B. Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp.
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill
N6	Northwest Steel Rolling Mills, Seattle, Wash
N9	Nelson Steel & Wire Co., Chicago, Ill
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore
P2	Phoenix Steel Corp., Claymont, Del
P3	Wyckoff Steel Div., Plymouth, Mich
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta	26.61	33.46	36.08	33.90	30.06	27.84	24.28	44.31	53.07	65.00	66.10	79.10
Baltimore	30.74	34.88	39.08	40.50	34.15	34.23	27.74	46.62	54.73	58.26	70.10	74.23
Birmingham	26.96	32.17	35.86	32.31	29.59	31.55	22.49	44.84	40.00	62.65	53.70	82.81
Boston	30.04	34.80	41.18	40.89	36.21	31.46	31.63	47.19	56.85	58.54	65.48	72.08
Buffalo	28.55	32.85	37.75	37.94	34.62	31.41	22.46	42.21	53.31	52.82	60.54	66.87
Chicago	25.43	30.94	33.38	32.14	28.33	29.05	19.47	42.01	46.37	52.34	58.76	64.63
Cincinnati	24.97	29.72	32.46	30.94	30.18	29.38	19.25	41.35	44.80	51.73	55.84	63.02
Cleveland	26.61	30.54	39.24	33.77	29.96	30.76	20.74	41.69	45.10	50.57	57.50	63.44
Denver	33.21	37.27	38.80	41.99	35.67	35.38	24.43	48.13	55.94	66.04	69.72	77.41
Detroit	24.96	29.25	32.38	30.92	29.51	28.79	18.24	40.98	44.66	50.53	56.65	61.79
Houston	27.07	31.73	36.06	40.17	30.36	33.22	24.00	51.26	57.32	63.60	67.04	78.17
Kansas City	27.69	32.18	35.42	34.10	31.17	30.58	23.08	43.25	49.48	55.55	58.45	69.50
Los Angeles	30.09	36.92	38.04	45.58	40.37	39.37	37.15	51.49	62.41	72.74	79.32	87.29
Memphis	27.81	33.39	37.76	35.70	28.40	29.58	26.21	44.72	54.16	69.22	65.11	80.59
Milwaukee	26.52	29.70	32.18	30.64	28.60	28.91	18.85	40.88	43.65	50.85	55.34	62.03
New York	30.05	34.12	39.11	44.95	30.29	28.69	24.39	48.37	53.84	59.20	68.70	74.84
Philadelphia	32.66	35.65	40.47	43.09	34.92	35.16	26.35	49.23	55.04	58.22	70.36	75.68
Pittsburgh	30.11	36.61	41.25	40.00	33.89	35.30	28.17	45.38	58.00	63.94	63.60	71.30
Portland	27.31	34.20	38.83	37.86	31.97	36.20	53.64	50.70	52.94	59.12	58.00	....
San Francisco	30.45	37.23	39.61	46.60	35.22	38.21	31.26	51.48	64.49	20.60	77.50	85.00
Seattle	28.40	34.44	36.36	43.03	32.29	38.79	37.40	53.16	64.68	71.30	76.09	86.33
Spokane	21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis	27.36	32.89	35.91	36.73	30.34	29.67	22.42	42.20	44.87	51.31	57.73	64.30
St. Paul	26.32	34.07	34.40	32.90	30.42	29.65	18.77	42.73	44.84	51.60	58.42	64.64

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛″ x 1″; Plate ¼″ x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-$2\frac{15}{16}$; Cold finished bar—C 1018—1″ rounds; Alloy bar—Hot-rolled 8620—1⅝″ round; Cold drawn—1″ round; Hot-rolled 4140—1⅝″ round. Cold drawn—1″ round. Check local supplier for additions or deductions from base.

*** Prices at all points include metropolitan delivery charges.**

NOTE

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Cover 1, p. 3, 42, 78-79.

SEPT

16

1981

Chilton's

STEEL FABRICATORS FACE A NEW IMPORT PROBLEM

SEPTEMBER 16, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

J 2150-2

FITTING TECHNOLOGY TO THE BUSINESS PLAN

METALFINISHING GUIDE: LOW SOLVENT COATINGS MAKE THEIR MARK

DETROIT WRESTLES WITH MACHINE TOOL DOWNTIME

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IRON AGE

VOL. 224, NO. 26

SEPTEMBER 16, 1981

COVER STORY

43 Fit technical managers into business planning
Is top management making enough use of corporate technology planners in putting together business and long-term strategic plans? Some argue technological advances can be used to increase market leverage, but top managers, pinched for cash, have lost their zest for costly, long-term R&D.

FEATURES

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Worker morale and plant spending have suffered by the general lack of concern for effective preventive maintenance programs.

36 Import question heats up over heavy plate vessels
With at least one dumping complaint in the works against Japanese producers, the pressure's on to consider the issue of open trade.

40 Offshore rig builders moving full steam ahead
Marathon Manufacturing's order book reflects the spectacular demand for drilling rigs, fueled by the boom in offshore exploration.

51 Coatings industry gets off to a good finish on compliance
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Steel imports are spilling into new markets, domestic mills say. Plate and sheet imports rise, joining oil field pipe.

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Construction activity in U.S. remains static. All types were down in July. Best bet for recovery is commercial and industrial building.

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JUDGMENT...INTUITION

DSS: New tool for the line manager

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

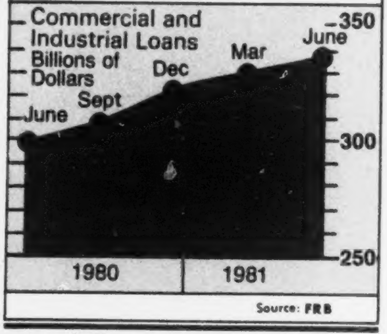
BUSINESS FINANCEFRONT

Is corporate liquidity being overrated?

Financial strength of U.S. corporations has deteriorated less than is indicated by traditional measures of corporate liquidity.

Major investors and credit-rating agencies may be placing too much emphasis on so-called "static ratios"—such as the relation of corporate debt to total capital—and not enough on dynamic measures such as net cash flow.

Borrowing Climbs



Source: FRB

The need for corporate liquidity has been greatly reduced by a changing economic environment and numerous financial innovations.

Those are the major findings in a new study from the Conference Board.

"New techniques of cash management, domestically and internationally, have greatly reduced and in the 1980s are likely to continue to reduce the requirements for liquid assets for U.S. corporations as a whole," the study finds.

It's noted that corporate cash requirements have also been altered in other ways. The growth in unused loan commitments at commercial banks has climbed from $147 billion in early 1976 to $290 billion at the beginning of this year.

"Since financial executives generally view these commitments as reliable sources of funds, the deterioration in traditional measures of corporate liquidity cannot be taken at face value," it's noted.

Companies have been encouraged to increase their debt—and have (see chart), especially in regard to long-term debt at fixed rates of interest, because of tax advantages. Many managements, it's noted, have also deliberately increased their debt because they see strong vested interests promoting inflation.

Says Conference Board economist Vincent G. Massaro, author of the study, "Many companies have borrowed long-term funds with a view toward repaying these funds in largely depreciated dollars. High interest rates have often not inhibited investment because of correspondingly high inflationary expectations."

The study shows that traditional ratios used to measure corporate liquidity and corporate capital structures clearly show a deterioration during the 1970s. The liquid assets of nonfinancial corporations divided by their short-term liabilities fell from a ratio of 0.79 in 1970 to 0.64 by the end of 1979.

Corporate current assets divided by current liabilities declined from a ratio of 1.62 in 1974 to roughly 1.49 by the end of 1979. And far more corporations had their credit ratings lowered than raised during the 1970s.

However, in a changing economic and inflationary environment, the study challenges the validity of these traditional measures. "The issue is largely one of emphasis," the study points out, "that is, whether the emphasis placed on traditional measures is still appropriate, given annual inflationary outlooks of approximately 9 pct to 10 pct."

Corporations generally underestimated the extent of inflation during the last half of the 1970s, the study indicates. Companies that bet against government effectiveness in controlling inflation have been rewarded far more than those that geared their decisions to greater price stability.

"If experience continues to demonstrate that it pays over time to bet against the government's ability to slow inflation," the Board says, "and if greater uncertainty continues, an increasing number of companies will adopt new strategies—on pricing, financing and other practices—that will further incorporate inflation into the U.S. economic system."

The study emphasizes that the financial positions of U.S. companies and the financial structure of the economy are shaping up as critical issues in the 1980s. While the deterioration in corporate financial strength is probably less than that disclosed by traditional measures, the situation remains troublesome.

The Board concludes, "Although the U.S. economy has withstood major external shocks in recent years—shocks that might well have led to depression in earlier periods—it is nonetheless important that policymakers take account of corporate financial positions and the financial structure of the economy in framing their monetary and fiscal policies."

Salaries for overseas managers are soaring

Thinking of accepting a job with a U.S. company overseas? Your best bet—in terms of compensation—is Buenos Aires.

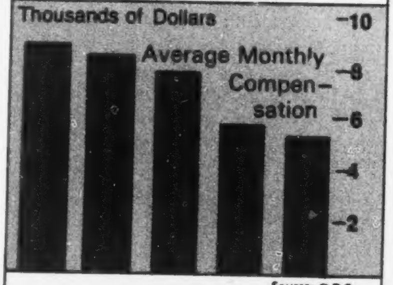
If you become a manager there with a monthly base pay of $4,000 and have three dependents you'll actually receive an average net compensation of $8,900 a month.

That compares with $8,400 in Tokyo, $7,800 in Al Khobar/Dammam (Saudi Arabia), $5,700 in London and Paris, and $5,300 in Frankfurt.

These are the findings of a new Comparative International Compensation Exchange (CICX) started by Organization Resources Counselors Inc. (ORC).

Through semi-annual surveys in locations abroad, it provides companies with data for evaluating expatriate policies involving managerial, professional and technical personnel.

What U.S. Overseas Employees Make



Source: ORC

In the most recent survey, covering 27 locations, ORC found the highest average overseas premium for a $48,000 employee to be $747 in Saudi Arabia, followed by $588 in Rome and $556 in Taipei.

The largest monthly payments for differentials in the cost of goods and services are in Buenos Aires, $2,365; Tokyo, $1,567; and London, $1,149. Differentials paid for housing costs average $3,042 in Tokyo, $2,742 in Buenos Aires and $2,310 in Hong Kong.

"The costs of maintaining expatriates are soaring, and companies need to know if their incentives are in tune with those being offered by competitors in particular locations," says Calvin Reynolds, vice president of ORC.

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	255	263	244	196
Buffalo	55	55	68	38
Pittsburgh	372	389	401	307
Youngstown	140	137	133	79
Cleveland	176	168	170	120
Detroit	189	172	166	103
Chicago	578	591	536	416
Cincinnati	112	114	112	63
St. Louis	83	81	82	58
Southern	250	228	221	191
Western	138	143	141	137
U.S. Production	2,348	2,341	2,274	1,708

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81. Hanna as of 1/20/81. Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective August 31, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,348	2,341	85,152	72,739
Capability Utilization Rate	79.4	79.2	82.9	71.5

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 6/21/81)	24.488	24.488	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 91.83	$ 94.83	$ 95.50	$ 93.17
No. 2 bundles	$ 62.50	$ 62.50	$ 62.50	$ 66.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$103.50	$106.50	$108.50	$ 99.50
No. 1 steel, Philadelphia	78.50	79.50	79.50	92.50
No. 1 steel, Chicago	93.50	98.50	98.50	87.50
No. 1 bundles, Detroit	94.50	97.50	97.50	91.50
Low Phos., Youngstown	106.50	106.50	106.50	94.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	96.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	119.50
No. 1 mach'y cast., Chi	127.50	129.50	127.50	119.50

---

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black p[illegible]t and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective August 31, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.95-84.00	83.30-84.00	8/31/81
Lead	42.00-46.00	44.00-46.00	8/20/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$427.00
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$440-$450
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.27
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Aug. 24—672.35
Aug. 25—673.31
Aug. 26—672.35
Aug. 27—673.31
Aug. 28—676.25

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	68
No. 2 copper wire	59
Light copper	50
No. 1 composition	68
No. 1 comp. turnings	66
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	29
Radiators	51

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	64	—66
No. 2 copper wire	54	—55
Light copper	50	—51
Radiators	43	—44
No. 1 composition	57	—58
No. 1 composition turn'gs	55	—56
Cocks and faucets	40	—41
Clean heavy yellow brass	35	—36
Brass pipe	40	—41
New soft brass clippings	50	—51
Yellow brass rod ends	43	—44
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE AUGUST 31, 1981

MATERIALS NEWSFRONT

(Effective August 31, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$103.00 to $104.00
No. 2 hvy. melting	93.00 to 94.00
No. 1 dealer bundles	119.00 to 120.00
No. 1 factory bundles (auto)	124.00 to 125.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	122.00 to 123.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	122.00 to 123.00
Heavy turnings	93.00 to 94.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	130.00 to 131.00
Scrap rails, random lgth.	110.00 to 111.00
RR specialties	123.00 to 124.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	650.00 to 660.00
18-8 turnings	550.00 to 560.00

Chicago

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	105.00 to 106.00
No. 1 factory bundles (auto)	111.00 to 112.00
No. 2 dealer bundles	69.00 to 70.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	97.00 to 98.00
Shredder scrap	95.00 to 96.00
Machine shop turn.	45.00 to 46.00
Mixed bor. and turn.	46.00 to 47.00
Shoveling turnings	49.00 to 50.00
Cast iron borings	64.00 to 65.00
Low phos. forge crop	116.00 to 117.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	121.00 to 122.00
No.1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth.	94.00 to 95.00
Reroller rails	124.00 to 125.00
Rails, 2 ft. and under	126.00 to 127.00
RR couplers and knuckles	119.00 to 120.00
RR car axles	174.00 to 175.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	102.00 to 103.00
Stove plate	99.00 to 100.00
Steel car wheels	108.00 to 109.00
Stainless	
18-8 bundles and solids	620.00 to 630.00
18-8 turnings	495.00 to 505.00
430 bundles and solids	120.00 to 125.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 77.00 to $ 80.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	108.00 to 111.00
No. 2 dealer bundles	52.00 to 55.00
No. 1 busheling	104.00 to 107.00
Shredder scrap	89.00 to 92.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	100.00 to 103.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	79.00 to 82.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 74.00 to $ 75.00
No. 2 hvy. melting	73.00 to 74.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	43.00 to 44.00
No. 1 busheling	93.00 to 94.00
Drop forge flashings	71.00 to 72.00
Machine shop turn.	32.00 to 33.00
Mixed borings and turn.	28.00 to 29.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	42.00 to 43.00
Heavy breakable cast	58.00 to 59.00
Mixed cupola cast	76.00 to 77.00
Automobile cast	101.00 to 102.00
Stainless	
18-8 bundles and solids	590.00 to 600.00
18-8 turnings	440.00 to 450.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$105.00 to $106.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	108.00 to 109.00
No. 2 dealer bundles	63.00 to 64.00
Machine shop turnings	19.00 to 20.00
Shoveling turnings	29.00 to 30.00
Lphos. plate	106.00 to 107.00
Electric furnace bundles	106.00 to 107.00
Galvanized bundles	93.00 to 94.00

Cleveland

No. 1 hvy. melting	$ 98.00 to $ 99.00
No. 2 hvy. melting	66.00 to 67.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles	116.00 to 117.00
No. 2 bundles	55.00 to 56.00
No. 1 busheling	106.00 to 107.00
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	25.00 to 26.00
Cut structural & plates, 2 ft. and under	130.00 to 131.00
Low phos. punchings plate	130.00 to 131.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	134.00 to 135.00
Rails, 18 in. and under	135.00 to 136.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 62.00 to $ 63.00
No. 2 hvy. melting	50.00 to 51.00
No. 1 busheling	69.00 to 70.00
No. 1 dealer bundles	67.00 to 68.00
No. 2 dealer bundles	39.00 to 40.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	21.00 to 22.00
Low phos. plate	90.00 to 91.00
Structural and plate, 2 ft. and under	98.00 to 99.00
Rails, 2 ft. and under	76.00 to 77.00
Scrap rails, random lgth.	56.00 to 57.00
No. 1 machinery cast	96.00 to 97.00
No. 1 cupola cast	64.00 to 65.00

St. Louis

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	83.00 to 84.00
Foundry steel, 2 ft.	83.00 to 84.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	78.00 to 79.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	93.00 to 94.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 88.00 to $ 89.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	38.00 to 89.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	114.00 to 115.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	101.00 to 101.00
Rails, 18 in. and under	120.00 to 121.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	98.00 to 99.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to $ 77.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 18 in. and under	109.00 to 110.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	73.00 to 74.00
Heavy breakable cast	37.00 to 38.00
Drop broken cast	100.00 to 101.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 prepared solids	110.00 to 120.00
410 solids	100.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	52.00 to 54.00
No. 1 dealer bundles	75.00 to 77.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	75.00 to 77.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 84.00 to $ 86.00
No. 2 hvy. melting	73.00 to 75.00
No. 2 bundles	61.00 to 63.00
No. 1 cupola cast	112.00 to 114.00
Mixed yard cast	102.00 to 104.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 heavy melting	$ 84.00
No. 2 heavy melting cut 2 ft. and under	80.00
No. 1 dealer bundles	87.00
No. 2 bundles	61.00
Mixed steel scrap	61.00
Bush. new fact. prep'd.	85.00
Bush. new fact. unprep'd.	76.00
Machine shop turn.	40.00
Short steel turn.	44.00
Mixed bor. and turn.	37.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	84.00 to 86.00
No. 2 bundles	55.00 to 57.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	77.00 to 79.00
Cupola cast	96.00 to 98.00

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PUBLICATION HAVE BEEN FILMED

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1981

Chilton's FLEXIBLE MANU

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

SEPTEMBER 28, 1981

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MANUFACTURING SYSTEMS SERIES: 20 HOW FACTORY FLOOR DATA COLLECTION IS CLOSING THE LOOP IN FACTORY AUTOMATION

DECISION SUPPORT SYSTEM: BLENDING MANAGER JUDGMENT WITH HARD NUMBERS

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Non-metalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING NEWSFRONT

Japan the Special Trade Representative said the proposed new trade group would be used to promote an informal exchange of opinions concerning overall trade problems among the three regional trading blocs and, in effect, would work to avoid serious frictions caused in the recent past by Japan's massive surpluses in yearly shipments to the country's major partners in trade.

ITC asked to extend fastener protection

The International Trade Commission is considering whether to give the domestic fasteners industry three additional years of import protection.

The industry has implored the ITC to extend import protection three more years. In a formal hearing at the ITC, Robert J. Blinken, chairman of the U.S. Fastener Manufacturing Group, said three more years is the "minimum additional period of time necessary" for the industry to retrench in order to compete with foreign imports.

He was joined by the United Steelworkers of America (USWA) and James E. Scheile, chairman of St. Louis Screw & Bolt Co.

"The domestic industry," Mr. Blinken said, "is now extremely vulnerable to further import penetration." This resulted from "an extraordinary combination of unfavorable and transitory developments."

These included: the substantial appreciation of the dollar; the sharp downturn in fastener demand, especially in the automotive industry; and the effect of the Trigger Price Mechanism on the U.S. price of wire rod compared to that available to foreign makers.

Mr. Blinken said "even without the intervention of these adverse economic factors since mid-1979, a three year adjustment period—which is what the ITC originally granted the industry—is simply too short.

"In relation to production volume and net profits, capital expenditures remain high," Mr. Blinken said. The domestic industry is going ahead with its rebuilding task "despite the obstacles," he said.

"Termination of the current import relief," added David Mallino of the USWA, "would not only retard the domestic industry's recovery efforts but would largely nullify the progress made thus far." He said high levels of imports cannot only cause unemployment for those who produce fasteners but also has a rippling employment impact on basic iron and steel workers.

Imports of bolts, nuts and large screws have declined a bit since 1979, but exporters to the U.S. continue to expand their share of the domestic market. That market share has grown from 45.2 pct in 1979 to 47.4 pct in 1980 and to almost 49 pct in the first two quarters of 1981. Apparent U.S. consumption of fasteners—domestic and foreign—was an estimated 1.4 billion pounds in 1980, down 19 pct from 1979.

U.S. Iron or Steel Fasteners

Quantity (1,000 pounds)

	Production	Imports
1979	1,053,380	792,983
1980	917,765	678,545
1981— (1rst half)	460,565	320,972

The ITC has until Nov. 5 to make its recommendation to the President.

EPA piling paperwork on businesses

The Environmental Protection Agency has "consistently flouted Office of Management and Budget rules designed to control government paperwork," the Congress' Joint Economic Committee has charged.

Basing their criticism on a General Accounting Office study done for them, the JEC said the EPA either violated OMB paperwork regulations or mismanaged its record keeping and reporting.

The GAO commented: "It is incongruous for EPA to require compliance with its regulations without itself making efforts to discontinue violating the regulations for imposing paperwork demands on the public."

JEC Chairman Rep. Henry S. Reuss (D., Wis.) said, "For too long the regulatory agencies have issued paperwork requirements pell-mell without considering the paperwork burden they impose on the business community and individuals."

Despite a Federal Reports Act requirement that all government forms be cleared by OMB before being issued, the GAO found 126 EPA reporting requirements for which there was no OMB clearance, according to JEC.

The accounting office charged the EPA "inadequately estimates the hourly burden of most of its paperwork requirements, thus making it difficult for OMB to administer the annual paperwork budget. In a survey of businesses GAO found that for one form which EPA estimated took ten minutes to fill out the actual burden rose to as high as five hours for a company with numerous pollutant discharge points."

The watchdog agency said each year about 26,000 businesses discharging wastewater file more than 213,000 reports with the 10 EPA regional offices for the purpose of helping the government monitor compliance with permit requirements. However, GAO found that EPA "virtually ignores the reports from 22,000 minor dischargers. In fact," it said, "one regional office failed even to check to see whether reports were actually received or came in on time."

Antitrust legislation heads for Capitol Hill

There should be legislation creating "shared liability" in antitrust violations cases, Assistant Attorney General William F. Baxter says. Mr. Baxter, who heads the Justice Department's Antitrust Division, says the agency will send such a proposal to Capitol Hill.

The Senate is currently considering legislation creating shared liability among companies in cases of illegal price fixing. However, Mr. Baxter said the measure should be broadened to include "antitrust violations in general."

Mr. Baxter said, at a press conference he has no thoughts of repealing or diluting the Sherman Antitrust Act of 1890. The Act's central concerns are "more valid today than when it was passed," he said.

The antitrust chief is contesting allegations that his recent remarks have increased uncertainty about antitrust enforcement or helped trigger a surge of mergers. Earlier, testifying on Capitol Hill, Mr. Baxter said it would be "an error of substantial magnitude" for the Reagan Administration to change its antitrust policy in response to a rise in mergers. He noted that the merger rate was 25 pct higher in 1968 when enforcers were far more willing to block mergers than he is.

Meanwhile, the Justice Department said it is working on eliminating a "substantial number" of past antitrust judgments because they "hinder competition or are out of step with enforcement policies." A statement from the agency said the Antitrust Division has already found some con-

(Cont. on p. 20)

DETROIT'S PRODUCTIVITY CAN'T CROSS LINES OF DEMARCATION

The diverse character of job descriptions leaves the door open for disputes over who does what. Time is lost to local labor strife.

By Bryan H. Berry

When managers ponder ways to increase manufacturing efficiency, many put the same wish at the top of their list: They'd like workers who don't nitpick about what they contractually can or can't do and who pitch aside the rulebook when a job needs doing. Instead, some managers feel, they get featherbedding that significantly cuts productivity and increases machine downtime when maintenance labor is involved. The issue produces heated emotions in both labor and management circles.

The distinctions between worker classifications are usually called lines of demarcation. They are more strictly defined between the skilled than the nonskilled workers; they exist in both union and nonunion plants.

Lines of demarcation vary widely from plant to plant, depending on work requirements, precedent, and personalities. The written and unwritten contracts in the union plants are negotiated at the plant level. In the auto and supplier industries, the national headquarters of the United Auto Workers at Solidarity House, Detroit, will look into local disputes but has not codified national standards. The local lines of demarcation simply are too diverse and hard to generalize. How did these lines of demarcation evolve and what have they wrought?

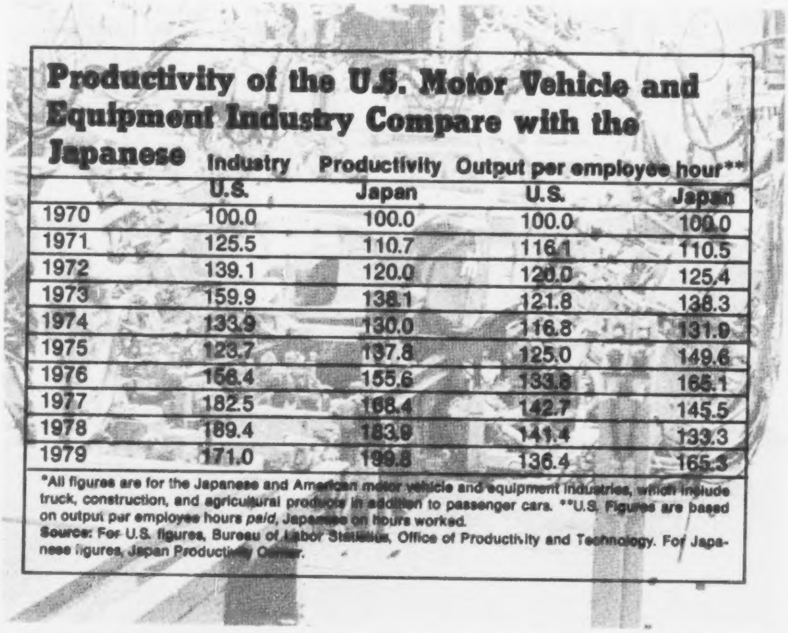
"Management is responsible for the training of the workers," says Byron P. Crane, Jr., general director of labor relations, General Motors. "We're the ones that perceive their abilities and cause them to specialize."

The lines of demarcation are meant to resolve points of friction between similar trades. "Disputes would arise between various trades and they had to be worked out," says Irving J. Bluestone, UAW vice president for GM affairs until last year and now university professor of labor studies at Detroit's Wayne State University. Since the foreman sometimes had as much at stake as the workers, Solidarity House would send a representative, himself a skilled tradesman, to decide what trade would do what. "Over a period of time these decisions became set as laws," says Mr. Bluestone, "and grew by feeding upon themselves, so that a sort of common law developed."

"During the good years in the auto industry," says Donald F. Ephlin, UAW vice president, Ford affairs, "we did get fat and lazy and sloppy in management and in union agreements, there's no question about it."

"Maybe we had it too good for too long," says Fred Bader, assistant master mechanic, process engineering, at GM's transmission plant in Windsor, Ontario.

"We found it impossible to set up nationally recognized and agreed-upon job descriptions of the trades," says Mr. Bluestone. "At the point we would try to do that, we would step



Productivity of the U.S. Motor Vehicle and Equipment Industry Compare with the Japanese

	Industry Productivity		Output per employee hour**	
	U.S.	Japan	U.S.	Japan
1970	100.0	100.0	100.0	100.0
1971	125.5	110.7	116.1	110.5
1972	139.1	120.0	120.0	125.4
1973	159.9	138.1	121.8	138.3
1974	133.9	130.0	116.8	131.9
1975	123.7	137.8	125.0	149.6
1976	156.4	155.6	133.8	165.1
1977	182.5	168.4	142.7	145.5
1978	189.4	183.9	141.4	133.3
1979	171.0	199.8	136.4	165.3

*All figures are for the Japanese and American motor vehicle and equipment industries, which include truck, construction, and agricultural products in addition to passenger cars. **U.S. Figures are based on output per employee hours *paid*, Japanese on hours worked.

Source: For U.S. figures, Bureau of Labor Statistics, Office of Productivity and Technology. For Japanese figures, Japan Productivity Center.

U.S. output has followed sales cycles, plunging after the sales slump that followed the Arab oil embargo in 1973-4 and rising sharply in 1976 to meet the high sales that lasted until the Iranian turmoil in 1979. The rise in Japanese output has been more gradual. "Although the productivity measure relates output to the hours of persons employed," notes the Office of Productivity and Technology, "it does not measure the specific contribution of labor as a single factor of production. Rather, it reflects the joint effects of many influences, including new technology, capital investment, the level of output, capacity of utilization, energy use, and managerial effectiveness as well as the skills and efforts of the work force."

Who Does What in the Motor Vehicle and Equipment Industry

Managers and officers	31,230
Technical occupations	13,890
Service occupations	27,040
Clerical occupations	58,910
Sales occupations	4,710
Professional occupations	41,900
Production occupations	772,840

Who Does What in the Production End of the Motor Vehicle and Equipment Industry

Maintenance mechanic	12,460
Auto mechanic	4,650
All other mechanics	2,870
Electrician	11,380
Carpenter	1,490
Maintenance repair and general utility	2,610
Millwright	9,820
Maintenance painter	990
Plumber and/or pipefitter	7,080
Oiler	1,700
Sheet-metal worker	5,230
Forging press operator	840
Grinding & abrading machine operator	12,220
Lathe and/or turning machine operator	9,720
Machine tool operator (combination)	21,660
Machine tool operator (numerical controls)	840
Machine tool operator (toolroom)	8,400
Machine tool setter (metalworking)	12,280
Milling and/or planing machine operator	3,180
Machinist	3,030
Punch press operator	25,380
Punch press setter (metal)	1,810
Crane, derrick, and/or hoist operator	1,980
Filer, grinder, buffer, chipper, cleaner, and/or polisher	9,750
Gear cutting, gear grinding, gear shaping	2,290
Shear and/or slitter operator	1,830
Compression and/or injection molding operator	2,240
Power brake and/or bending machine operator	3,540
Drill press and/or boring machine operator	12,210
Conveyor operator or tender	7,040
Electroplater	860

Welder and/or flame cutter	
Class 1 (highest)	6,810
Class 2	24,780
Class 3	18,800
Machine assembler	
Class A (highest)	1,360
Class B	4,290
Electromechanical assembler	
Class B	1,610
Assembler (Class C)	181,600
All other assemblers (Class A)	7,890
All other assemblers (Class B)	19,340
Blue-collar supervisor (non-working)	37,560
Inspector	47,620
Helper trades	680
Order filler	2,670
Stationary engineer	680
Tool and die maker	14,330
Heat treater, annealer and/or temperer	2,670
Tester	6,190
Painter (production)	16,650
Riveter (light)	1,040
Driver (assembly line)	610
Truck driver	3,510
Industrial truck driver	24,670
Production packager (hand or machine)	3,560
All other skilled crafts & kindred workers	10,410
All other operatives & semiskilled workers	84,260
All other laborers & unskilled workers	47,870

Source: Occupational Employment Statistics Survey, 1977, Bureau of Labor Statistics. Statistics are from the motor vehicle and equipment industry, which includes truck, construction, and agricultural products in addition to passenger cars.

on someone's toes somewhere where they had worked out an agreement that was quite different."

How strictly the lines of demarcation are observed varies from plant to plant. Disputes can arise over aspects of a job merely incidental to it. Most of the horror stories about lines of demarcation recited by critics involve such incidental elements of a job.

One machine tool builder recently visited an auto plant in Detroit to help with the modification of his machine. "This required the installation of a proximity switch," he says, "which in our plant would have taken five or ten minutes. In the auto plant it took all morning.

"There was a dispute between a toolmaker and an electrician over who would drill two holes to mount the switch. They got their union book out and read it and couldn't interpret it, so they got the shop steward over and he read it. They finally determined that if you just drill a hole, the electrician does that. But if the hole is drilled and subsequently *tapped*, the toolmaker does that. The machine sat there for half a day while the two workers stood there and argued over their rights."

Other classic incidentals: Who loosens the bolts to remove the plate when an electrician is going to repair a motor or wiring? The contract may state that's millwright's work. Who works on the piping on a die? The pipefitter or the tool and die maker? Do you have to call an electrician to remove a limit switch or can you pull it yourself? The contract may specify the electrician.

Such questions bedevil some plants, particularly new ones. Sometimes they are resolved over time. Management complains continually about incidentals, says Mr. Bluestone, but General Motors never formally broached the subject or presented statistics on it at the bargaining table. Solidarity House usually advises workers to go ahead and do the tasks incidental to their job, he says.

"Maybe some workers feel that the line of demarcation is a God-given Berlin Wall between himself and the next guy," says Mr. Crane, "but if a transfer line goes down, that's Armageddon. There is nothing more important than getting back to work. We put everybody on the job we can find.

"If we don't have enough machine repairmen but we have millwrights, we ask the millwrights to help them. And they do." If he says 'No, that's not my job,' he's out on the street."

Do lines of demarcation cut productivity?

"To some degree they restrict productivity," says Mr. Ephlin. "They can restrict management's flexibility and right to operate. Just as the very rigid bureaucracy created by a company might." For example, he cites the red tape labor must unsnarl to get management to requisition machine parts.

Mr. Bluestone and Mr. Crane say that disputes over incidental tasks cause brief delays. Otherwise, they say, lines of demarcation have a minimal effect on productivity and downtime.

Quite a few managers disagree. "Lines of demarcation are our biggest handicap right now," says one. Others estimate that as much as one-third of the downtime in their plants is spent waiting for skilled tradesmen to arrive to repair. "The skilled tradesmen we need may be half a plant away," says one manager, "and in our huge plants that may mean more than a quarter mile."

As a rule of thumb, says one manager, the more skilled tradesmen you need to repair a machine, the longer you'll have to wait for them all to arrive. Ford's North American productivity office found that 0.6 pct of the total 23 pct downtime of all Ford operations of 1974-80 was due to "people-oriented problems such as lines of demarcation" (see "Detroit Wrestles with Machine Downtime," *IA*, Sept. 16).

The problem is most acute on machines combining several different technologies. Maintaining a transfer system that combines sophisticated hydraulic, pneumatic, programmable logic control, and sensor systems may require four or five trades.

Past management has tended to create new worker classifications to handle new technologies. Trades have specialized, proliferated, and sometimes been left with nothing to do. That trend is reversing, as managers in many plants aim at multiskilled tradespeople with the flexibility to do various jobs. "For the sake of survival," says Mr. Bader, "we are going to have to modify certain ideas about demarcation and become more flexible. That's all there is to it."

The ultimate flexibility is no lines of demarcation at all. General Motors went almost that far in its Oklahoma City plant. The only two worker classifications were mechanical and electrical. "It didn't work out," says Mr. Crane. The plant required workers who could competently perform the traditional trades full-time. Workers separated into traditional trades and even labeled their trucks that way. "That's just the natural way of managing your business," says Mr. Crane.

Manufacturing managers, he says, dream of "whirling dervishes, utility infielders. Supermen" who can perform every job on the plant floor. "Such animals don't exist," he says, particularly in large plants. Smaller plants of 300-400 people, with smaller workloads and less equipment, are suited to the multitrade approach.

When American managers dream of Whirling dervishes, they dream of Japanese whirling dervishes.

One person with a number of skills can competently do the different tasks as they come up.

Sometimes skilled trades simply have to be reorganized. (At Buick, truck repairmen are divided into electrical and gas truck repair. "Instead we ought to have over-the-road-truck repair and industrial in-house truck repair," says Mr. Kolp. "The big diesel trucks that go over the road are significantly different and require different skills from the in-house lift mechanisms.")

As the need for bricklayers diminishes at Buick, Mr. Kolp hopes the bricklayers can be combined with the cement finishers, whose work is on the rise. The alternative is to lay off some of the bricklayers. "The two groups should be brought together," says Mr. Kolp, "because there are a lot of similarities between them. The concrete guys lay block on the floor, while the bricklayers take care of it going up."

Labor inefficiencies can crop up as technologies change. When Buick switched from tabletop to automatic gages, the gate repairmen didn't have the skills to repair the new technology. An electrician and machine repairman were required. For a while, the gage repairmen continued answering requests to repair the automatic gages, and would then call the electrician and machine repairmen. Otherwise, they feared they'd lose their jobs.

Many plants are solving such dilemmas by training the worker in the skill closest to his original one. For example, as electronics pushes aside traditional electricity, Buick is training its electricians to be electronics specialists. "Every time technology takes a step," says Mr. Kolp, "you don't bring in another classification. You have additional training for people to handle that new technology." Other workers at Buick are being trained in hydraulics, lasers and electron beam welding.

When American managers dream of whirling dervishes, they dream of Japanese whirling dervishes. The workers there sweep the floor at their station. They have no classifications and they do whatever needs to be done. Management encourages them to learn new skills and "30 to 40 pct of the line workers can handle more than one job," says Tetsuo Koyama of the Japan Productivity Center.

The big difference between the Japanese and American autoworkers, says Mr. Ephlin, is the Japanese guarantee of lifetime employment. "The Japanese union people" he says, "are concerned about the success of the enterprise, very much so, to a greater degree than we are here. The Japanese worker is more dedicated to his company because he expects to spend his life working for that company. That is a prospect not every Ford worker can look forward to at the moment.

Mistrust and poor communication mar relations between labor and management here. Unions will agree to changes in lines of demarcation but only when convinced that management is not out to eliminate jobs. Even then, management must do a good job of persuading workers of the advantages of the change. Workers who have known themselves as pipefitters or tool and die makers for years may have to be persuaded to adopt a new title and skill. Proposed changes may frighten workers who feel their jobs are threatened by other workers with other skills. They may feel that management is pitting worker against worker.

"Management can't just erase the old skilled trade," says Mr. Kolp. "You can't just go in there overnight because you interpret it as not being right. You evolved into that skilled trade and you've got to take time to evolve out of it." They may mean simply waiting until the old skilled tradesmen retire. ☐

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METALWORKING PRICE TRENDS

Executives hold the cheers as prices—and profits—cool

If you want to get a good, clear look at just how sharply price advances have slowed in recent months, one of the best trend lines to look at is the one for producer prices of finished goods.

And there, perhaps the best perspective is had in looking at these prices over 3-month periods.

In the January-March period, the average monthly producer price increase came to 1.1 pct. In the June-August period, the average monthly hike came to .4 pct.

At first glance, those figures may suggest piddling changes in prices between the two periods. But put those average monthly changes on an annual basis, and the message of slowing price advances comes through loud and clear. The annual rise rate in the January-March period was 13.2 pct; in the June-August period, 4.8 pct.

Prices of metalworking products have moved at the same slowing rate of climb as those for all producer finished goods.

The average price rise from a year ago for the 23 metalworking product lines listed on the table here came to 9.9 pct in August. That is a sharp slowdown from the 11.4 pct rate in January and February of this year.

Too, in the months during the last half of last year and the first quarter this year, every product line listed on the table was in 'plus' readings in price changes from previous months. However, in August, it can be seen that there were actual price decreases in 5 product lines listed on the table, and prices in two other lines showed no changes.

It seems clear enough that inflation in the economy, and in metalworking, is cooling. But the cheers from the grandstands of big corporations and bleachers of small companies are not at all thunderous.

Only those who turn the money supply valves in the Federal Reserve Board seem unreservedly pleased with the retreat of inflation.

But businessmen point out, it isn't the Fed that is paying the price. Real growth in the nation's markets (real GNP) has grown by only .4 pct since the first quarter of last year. Corporate profits, in turn, have plummeted 18 pct from their recent high in that same period.

Latest Month Covered: August, 1981

Products	Index Reading For Month (1967 = 100)	Pct Change From Previous Month	Pct Change From Year-Ago Month
Metal Cutting Machine Tools	346.5	+ .2	+ 9.0
Metal Forming Machine Tools	380.2	+ .2	+ 7.4
Agricultural Machinery & Equip.	289.3	+ .7	+11.3
Construction Machinery & Equip.	324.9	+ .3	+10.7
Special Industry Mach. & Equip.	310.5	− .2	12.1
Industrial Process Furnace & Ovens	331.8	− .1	+10.5
Industrial Material Handling Equip.	280.7	+ .6	+ 9.9
Pumps, Compressors & Allied Equip.	328.6	+ .7	+13.0
Fluid Power Equip.	223.6	NC	+11.1
Mechanical Power Transmission Equip.	299.7	+ .2	+12.8
Automobiles	205.3	− .2	+ 7.2
Motor Trucks—Light	244.0	− 2.4	+10.3
Motor Trucks—Heavy	283.6	NC	+ 9.6
Railroad Equipment	345.0	+ .2	+ 8.5
Fabricated Metal Structural Products	300.0	+ .6	+ 9.9
Electric Motors	279.0	+ 1.6	+ 9.5
Valves & Fittings	312.0	+ .5	+ 6.8
Ball & Roller Bearings	315.8	+ 3.3	+16.9
Cutting Tools & Accessories	261.1	+ .1	+ 9.8
Heating Equipment	227.2	+ .7	+ 9.2
Plumbing Fixtures & Brass Fittings	271.0	+ .3	+ 8.2
Metal Containers	319.4	+ 1.2	+ 5.3
Miscellaneous Metal Products	273.8	− .4	+ 8.1

Data based on U.S. Labor Dept.'s Producer Price Index

METALWORKING ORDER TRENDS

Orders: Some up, some down—but mostly sideways

At first blush, the figures on durable goods new orders looked pretty good for July, the latest month of complete data.

For one, dollar volume of orders was up from June. Also, the $90.5 billion in orders in July marked the first time that dollar volume ever crossed the $90 billion level.

But a bit harder look at the figures shows they just aren't what they seem to be.

New orders for durable goods (about 88 pct accounted for by metalworking industries), in July were up by $2.2 billion over June's $88.3 billion volume. But . . . some $2 billion of that total rise was accounted for by the aircraft and parts industry. And that is a volatile hook on which to hang any claims for genuine gains. For example, these orders soared by 50 pct in July after collapsing by 30 pct in June.

Another thing—in inflation-adjusted terms, new orders dollar volume in July was only fractionally better than in June—and just about where it was in December of last year. Moreover, in real terms, July orders were more than 5 pct below the monthly average for the 12-month period preceding the 1980 recession (January-July).

So, it can be said that durables orders in July, including for the most part metalworking industries, continued to mark time. In real terms again, it can be said that these orders have been on a plateau since September of last year.

One of the industries showing a hefty gain in orders in July over June was shipbuilding—another up-and-down industry if there ever was one. Orders received by this industry in July, at $1.6 billion, were nearly double June orders of $.9 billion.

Primary metals orders were up almost 10 pct in July as both steel and nonferrous industries improved their June volumes.

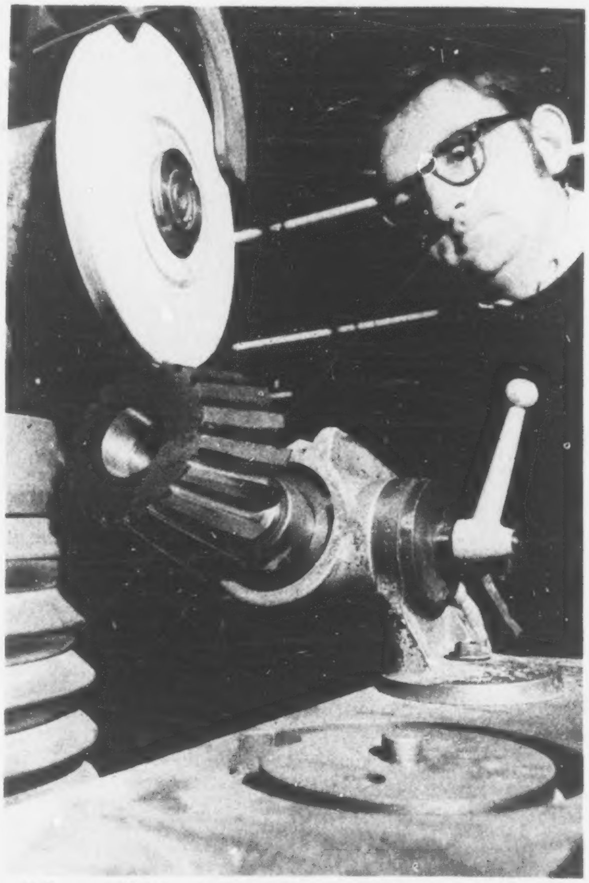
The machinery industries were hit by orders declines in July as noted on the table here.

In the big-tag metalworking category of capital goods, there was an increase in orders in July. And this increase came in both defense and nondefense lines. In the larger nondefense capital goods sector, the orders rise was due to a mix of aircraft orders that were up and machinery orders that were down.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	2nd Qtr.	$311.9	$312.2	$294.4
Manufacturing, Total	2nd Qtr.	122.0	124.5	115.7
Manufacturing, Durable Goods	2nd Qtr.	60.3	61.2	59.4
Mining Industry	2nd Qtr.	15.9	16.2	12.8
Key Indicators, Durable Goods Manufacturing				
New Orders	July	90.5	88.3	80.2
Shipments	July	87.4	88.8	75.6
Inventories	July	180.7	178.7	170.4
Unfilled Orders	July	317.5	314.5	300.4
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	July	25.1	23.2	23.5
Capital Goods Producers, Defense Industries	July	5.5	5.0	6.8
Primary Metals, Total	July	12.4	11.3	10.6
Steel (SIC 331)	July	6.5	6.0	4.7
Iron & Steel Castings (SIC 332)	July	1.7	1.8	.4
Nonferrous Metals	July	4.8	4.2	5.1
Nonelectrical Mach.-Equip. Industries, Total	July	17.0	17.3	15.7
Engines & Turbines	July	1.1	1.5	1.0
Farm Machinery & Equipment (Shipments)	July	1.3	1.3	4.5
Construction, Mining & Materials Hdlg. Equip.	July	3.6	3.9	2.8
General Industrial Machinery	July	1.6	1.3	1.2
Fluid Power Equipment** (Index-1972=100)	July	313	298	218
Metalworking Machinery	July	.8	.8	.8
Machine Tools, Total (Millions $, unadjusted)	July	190.6	309.1	304.6
Machine Tools, Metal-Cutting***	July	132.5	253.7	267.6
Machine Tools, Metal-Forming***	July	58.1	55.4	37.0
Electrical Mach. & Equip. Industries, Total	July	12.1	12.6	10.3
Elec. Transmission Equip. & Industrial Apparatus	July	2.0	1.9	1.8
Household Appliances	July	1.1	1.2	1.0
Communication Equipment	July	3.6	4.0	3.1
Transportation Equip. Industry, Total	July	20.8	19.0	19.7
Motor Vehicles & Parts (Shipments)	July	12.1	13.4	9.5
Aircraft, Missiles & Parts	July	6.1	4.1	7.8
Shipbuilding & Military Tanks	July	1.6	.9	1.4
Fabricated Metal Products, Total	July	11.0	11.0	9.1
Instruments, Total	July	4.4	4.3	3.7

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

IN IRELAND, INDUSTRY IS IN CLOVER



U.S.-owned Mohawk Europa, Ltd. supplies the EEC market with high speed steel and carbide-tipped cutting tools.

The Irish government, through its industrial development arm, is building a diversified industrial base.

By Michael Marley

The Irish seem to have a shade of green for every occasion and every reason. Kelly green, the Emerald Isle, the wearin' of the green—you name it and the Irish have something in green to fit.

In recent years, many American businessmen have learned that the Irish share their liking for yet another shade of green—the tint of the U.S. dollar.

No, they are not greedily coveting American greenbacks. Nor are they minting, counterfeiting or giving them away. The Irish instead are offering U.S. businessmen and their counterparts from other nations the opportunity to make and keep enough dollars, yen, deutschemarks or whatever currency they desire.

The method, as explained by Ireland's Industrial Development Authority, is simple enough: Build a plant in Ireland and employ Irish workers in it. If simplicity isn't enough, they'll throw in some hard-to-resist incentives—tax breaks, outright grants and other forms of assistance—to make the project attractive in its startup stage and to help it keep its good looks further downstream.

In fact, the Irish approach to industrial development has proved so successful that it has spawned similar efforts throughout Europe and in several Third World nations.

The main reason an American manufacturer might be interested in setting up a plant in Ireland is that the nation is a member of the European Economic Community (EEC), better known as the Common Market. Ireland became a member of the EEC in 1973 and as such can offer companies on its soil the opportunity to trade in a multinational market of some 260 million people.

But the Irish industrial development effort is not a free ride for foreign businesses. It is instead a two-way street in which the business community and the Irish people are expected to benefit. What gains the nation's citizens achieve are in the form of jobs, employment for the ever increasing number of young people entering the labor pool in Ireland each year.

Unlike many other European countries, Ireland has had a net increase in its population for much of the recent past. More than half of the country's population is under 25 years of age and few are likely to find jobs in the farming industry, traditionally the country's largest industry and its biggest employer.

Access to the Common Market, however, is hardly enough to bring an overseas industry to Ireland and expect it to set up more than just a one- or two-person trading office.

As a result, the Irish government has established a tax and financial program for business. In its first incarnation, the keystone of the program was a tax-free environment on any products exported by foreign businesses' production facilities in Ireland as well as the country's own manufacturers.

That so-called earn-a-dollar, keep-a-dollar policy was dropped last year and in its place is an annual 10 pct maximum tax on manufacturing profits until Dec. 31, 2000. Those companies in Ireland and involved in the export business prior to the change in tax policy, however, are entitled to claim tax-free status for goods shipped abroad until the end of this decade.

Other incentives include a fully paid government program to train workers to a skill level deemed necessary by an incoming company, ready-built factories, government grants on buildings and equipment (In the manufacturing sector, the grants are typically between 35 and 40 pct of the total cost of a project) and interest-free loans for the purchase of some types of production equipment.

Those incentives have brought several hundred overseas companies to Ireland in recent years. As an indication, from 1972 to 1979, foreign firms invested more than $5.5 billion in plants and facilities in the Irish republic (see chart, p. 57).

There are two reasons beyond those of the incentive package that seem to explain Ireland's uncanny ability to attract and keep foreign companies, many of them American-based. One is its English-speaking work force. For

American managers, less skillful in foreign languages than their European and Japanese competitors, the fact that they'll be able to talk to their workers with a crash Berlitz course is a distinct advantage.

The other is the size and location of Ireland. The country is an island about the size of Illinois or Indiana. Most of the industrial areas or estates are no more than two hours by road from a major port. On the average, Irish industrial officials estimate, it takes from two to three days for a shipment to reach a destination in Europe.

In economic terms, the government-backed program to develop an industrial base has been a boon to the country's position in the world trade market. It still, however, has not solved all the nation's economic woes.

"Our big problem," says John T. Kerrigan, executive vice president of the IDA's industries Div., "is that we are fighting a battle where we are running hard to stand still."

Job losses are the reason. A nationwide industrial shakeout followed Ireland's decision to join the Common Market and thus open its borders to free trade with the other EEC member nations. The competition from continental Europe together with the current recession has sent many of the nation's older companies to the wall, Mr. Kerrigan says.

So, while the IDA was instrumental in providing about 17,000 new jobs last year, it still could not keep pace with the losses, which reportedly totaled 25,000 jobs nationwide.

Nevertheless, Mr. Kerrigan is optimistic that the shakeout will soon be history. "I don't think it will continue at this rate," he adds. "I think the structural change bit is almost finished and, hopefully, we look for an economic upturn in the early part of 1982."

While displeased that Ireland has been unable to generate much net growth in manufacturing employment, Mr. Kerrigan notes that more than 80,000 Irish workers are employed in the foreign companies that have established manufacturing plants in Ireland, workers who might have been on the unemployment rolls were it not for the industrial development program.

On this side of the Atlantic Ocean, the rising population and the dwindling numbers of jobs (Ireland's unemployment is currently about 10 pct.) would normally indicate a cheap and plentiful supply of unorganized labor. That view, however, fails to recognize one fact of Irish industrial life, a fact that seems to cause the most concern among overseas businessmen, especially Americans.

The Irish, like most European businessmen and industrialists, take a different view of unions. It might be described as a sort of economic *detente* or peaceful co-existence.

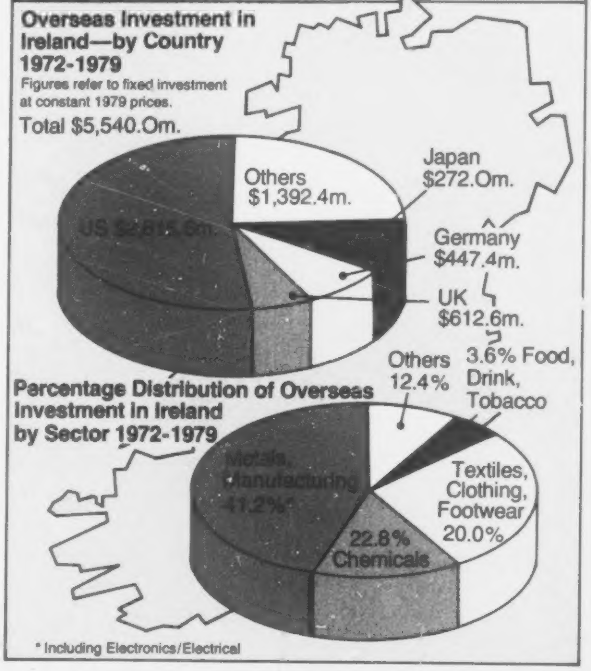
The thinking, in essence, goes: Unions exist. Sooner or later, one will organize the plant. Why not sit down and reach an accommodation with one to avoid the strife and distrust that are likely if one comes in later after a bitter contest.

Mr. Kerrigan says that IDA officials believe there is an understanding gap to be closed because the customs and mores of Europeans are different from those of the U.S.

"We say to companies," he explains, "that we believe you should talk to the unions, before you set off, and come to an agreement with whatever union you think is the best for your industry or your area.

"A lot of U.S. companies find this a strange concept, that you actually invite a union into your plant. That's pretty strange stuff by U.S. standards. But the fact of life in Ireland is that 75 pct of the labor force in manufacturing is unionized."

U.S. Manufacturers Provide the Bulk of Foreign Investment in Ireland



At the same time, he adds, many of the leaders of the Irish trade unions support the IDA's efforts and have traveled abroad to speak for the program and to welcome overseas companies to Ireland.

Another fact of industrial and economic life in Ireland is the so-called National Understanding, a sort of nationwide labor agreement that usually runs a year or 15 months and establishes pay scales for everybody who receives a wage or salary.

Mr. Kerrigan says many U.S. companies are surprised that the Irish accept centralized wage bargaining. These national wage agreements, he says, have been a part of the nation's economic life since 1970 and, for the most part, have done more good than harm.

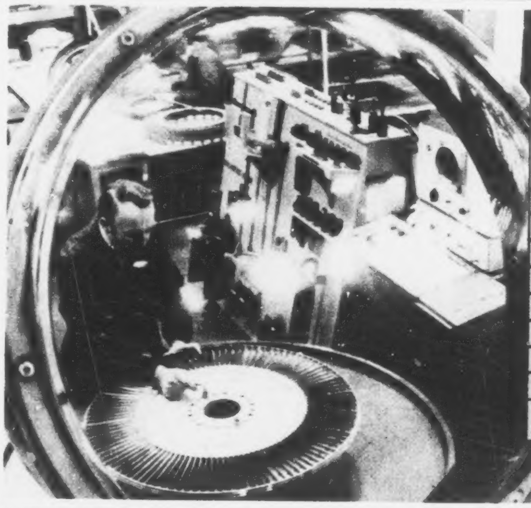
"I wouldn't say they are universally good," he adds. "They have resulted in relatively high wage settlements."

Nevertheless, he says they have produced industrial peace in the private sector. The IDA surveyed the 800 foreign companies in the manufacturing sector and found that 80 pct had not lost time because of a strike and 90 pct had never lost more than one day per man a year as a consequence of labor strife.

While not oblivious to the nation's economic problems, the IDA has been moving along in high gear in its efforts to build a strong industrial base for the country. In mid-July, for instance, the Irish government agency announced that 10 U.S. companies, all based on the West Coast, were set to build new plants or expand existing facilities in Ireland.

Most of these are small by U.S. standards, with employment levels at each proposed facility totaling between 75 and 120. For the Irish industrial officials, that's what they generally consider the ideal size for a single manufacturing plant in Ireland.

They are reluctant, they explained, to consider any proposals for a single plant that might employ, say, 1,000 workers. One reason is that the capital commitments



Irish Wages And Prices Keep Climbing

	GDP volume growth**	GDP volume growth per worker	Unemployment	Rise in consumer prices**	Compensation per employee**
1973	4.1	3.4	5.6	11.5	19.1
1974	3.7	2.7	6.0	15.8	17.9
1975	2.1	3.9	8.5	22.3	29.7
1976	1.5	3.0	9.5	19.2	20.5
1977	5.6	5.3	9.4	12.6	15.3
1978	6.0	4.9	8.7	7.9	14.9
1979	1.9	0.6	7.9	12.2	16.6
1980*	1.0	0.3	8.7	18.5	24.1

* Preliminary estimate
** Pct change over previous period, annual rate. Source: EEC

Aer Lingus' Airmotive Div. plans to be rebuilding more than 300 jet engines a year by 1986.

would be substantial for a facility that size. Another is that if a plant that large failed, it could have a severe impact on a local economy.

One that meets most of their criteria in terms of size and range of operations is the Inland Motor Industrial Drives Div., a division of the Stamford, Conn-based Kollmorgen Corp. Kollmorgen established the plant in Ennis, County Clare, in 1973, expanded it 1978 and is planning another expansion.

Inland, according to Nick Hodgers, its managing director, manufactures feed drive motors for the machine tool industry. Much of its Irish division production is for European-built NC lathes and machining centers, but the company plans to diversify into the robotics and specialized machinery markets.

Sales in the current year are up 15 pct from last year, Mr. Hodgers said, adding that the Inland Div. is still in the growth mold and expects to double its sales within five years.

The Irish facility currently employs about 215 workers, most in its assembly and manufacturing operations. The work force also includes a product design and development team as well as sales and marketing personnel, he added.

Mr. Hodgers bemoaned the fact that Inland has had problems finding qualified sales engineers and marketing personnel. The company has little or no problems hiring machine operators for its manufacturing operations, he added.

One reason the latter are not in short supply may be the state-run job training programs. The national government established AnCO (The Industrial Training Authority) in 1967. There are now an estimated 15 such centers throughout the country.

The training authority's assignment is twofold. First, it provides a training advisory service for companies.

Secondly, it provides direct job training. In this role, the AnCO centers have established training courses, either for recent high school graduates who lack marketable job skills or for adults unable to find work.

Besides the adult training, the AnCO centers also offer first year off-the-job apprenticeships. These apprentices are sponsored either by a private company or the training authority.

For industries that need skilled craftsmen immediately, The IDA has taken steps to help ease the skilled manpower shortage. It has advertised in overseas communities to which Irish workers have emigrated and offered them substantial bonuses to return to Ireland and work there.

One of the Irish industrial agency's most ambitious development projects involves not an overseas firm, but a division of the government-owned airline—Aer Lingus. The airline opted in the mid-'70s to widen its operations by adding three new lines of business—hotels and leisure services, finance and computer services, and aviation-related services.

Airmotive Ireland, a part of the last group, got underway in 1974 primarily as a maintenance contractor for several smaller national airlines in Europe, Africa and the Middle East. Sales of contract maintenance services, which totaled 2.4 million £ (Irish) in 1974, climbed to more than 13 million £ (Irish) last year, according to John Towers, Airmotive's managing director.

As a result of the rapid expansion of its contract maintenance services, the airline's executives decided to move the Airmotive Div. out of the Dublin Airport. With the IDA's financial backing, they obtained a plant north of Dublin, once owned by a French airplane builder.

Mr. Towers said the facility will be used to rebuild Pratt & Whitney's JT3D, JT8D and JT9D engines as well as the Rolls Royce RB 211. The airline's executives expect the plant to be rebuilding over 300 jet engines a year by 1986.

While Airmotive was expanding to serve a worldwide airline market, an American company, Simpson Industries, Inc. of Litchfield, Mich., opened a new plant in Ireland's Shannon Industrial Estate to serve what is fast becoming a world market—the automotive industry.

Simpson Europa Ltd. was established in Ireland to serve the European market for vibration dampers and other round parts, according to Daryl Marsh, its president. The new plant is housed next to an existing Simpson subsidiary, Mohawk Europa, Ltd., a producer of multi-diameter high speed steel and tungsten carbide-tipped cutting tools.

"The crankshaft damper is our lead product," Mr. Marsh said, "but we are also looking for opportunities to maximize our machine investment by obtaining contracts for similar parts."

Currently, Mr. Marsh added, the company is supplying dampers to Ford in Great Britain and Saab in Sweden. ☐

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MINING CONGRESS 1981: WATT A DIFFERENCE A YEAR MAKES

It's been less than a year since the industry had branded government policy on strategic non-fuel minerals lax, misguided and dangerous.

By Robert J. Regan

There should be fewer brickbats among the bouquets tossed during encounters between mining industry executives and government representatives attending this year's American Mining Congress Mining Convention in Denver.

It was just a year ago, during the 1980 convention in San Francisco, that the mining industry and its allies in Congress were branding official government policy on strategic non-fuel minerals "lax, misguided and dangerous," not to mention unrealistic and a danger to the economy and national security.

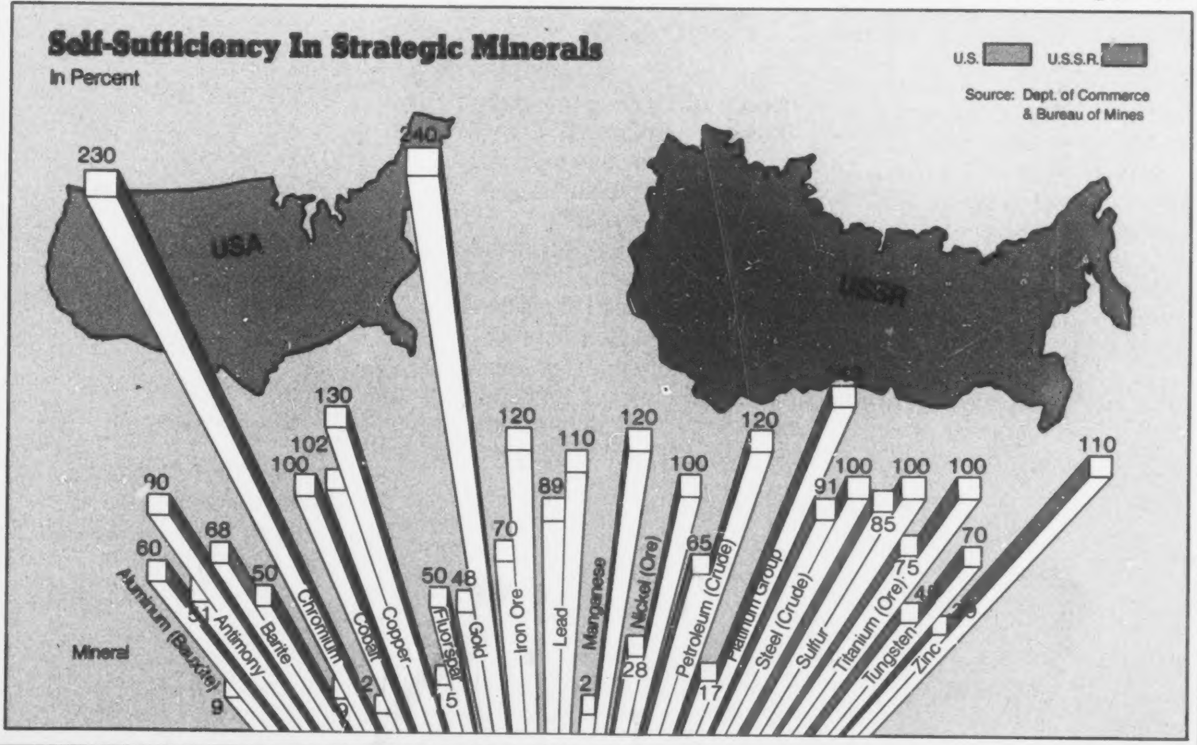
During the current four-day session, which ends Sept. 30, the anticipated 4,500 attendees will be taking the measure of the differences a change to a friendlier Administration—albeit in a currently unfriendlier economic situation—can bring. Government representation accounts for 47 of the 149 participants in the 1981 program and the miners will be gaging potential policy changes in areas from public lands management through environmental regulations and taxation to the ongoing debate over availability of strategic materials.

Prominent on the agenda is President Reagan's controversial Secretary of the Interior, James G. Watt, who has taken a strong stand on multiple use of public lands. The Secretary has already declared that the Interior Department should be "the amicus for the nonfuel minerals industry in the court of Federal policy making." He told a Senate Foreign Relations subcommittee earlier this year that this does not make Interior "a representative of private mining interests per se, but a spokesman for the very real public interest involved in the protection of a strong minerals sector."

AMC Chairman J. Allen Overton took up the cudgel on the public lands issue in a letter to the New York Times earlier this month in which he asserted that the term "crisis" may be too strong for the nation's minerals problems, they are profound and have "ominous implications."

Mr. Overton said no one is advocating "pell-mell exploitation" of Federal lands. "There is a quest to open more public lands to minerals exploration and development, although many geologists doubt if we will discover easily recoverable supplies of vital metals now mined primarily in southern African nations and the Soviet Union. We won't know if we don't get a chance to look."

Like Mr. Overton, Secretary Watt puts the strategic minerals situation—now referred to in many government and industry circles as "the resources war"—at the center of the public lands issue. And he wants a wider role given the private sector, rather than the U.S. Geological Sur-



vey and the Bureau of Mines, in determining the minerals potential of lands inventoried for multiple use.

Minerals availability, once again figures prominently in the AMC program. Simon D. Strauss, consultant for Asarco Inc. and chairman of AMC's minerals availability committee, selected the role of Third World countries in minerals supply as his topic and Paul K. Krueger, assistant associate director of the Federal Emergency Management Agency's Resources Preparedness Office chose the management of the nation's minerals stockpile.

The Massachusetts Institute of Technology sent Daniel F. Fine of its Mining and Mineral Resource Research Institute, to explore the matter from the viewpoint of "The Soviet Union and the Resource war."

Rep. James D. Santini (D., Nev.), who chairs the minerals availability session, has been pressing for legislation that will inject into Federal lands policy—and foreign policy as well—increased concern for availability of strategic metals for the defense industries.

During hearings conducted by Rep. Santini's mines and mining subcommittee on the eve of the 1980 AMC convention, Secretary of State Alexander Haig (then chief executive officer of United Technologies Corp.) warned of an alignment of southern Africa with the Soviet Union that would give Moscow control of "as much as 90 pct of several key minerals for which no substitutes have been developed and the loss of which could bring the severest consequences to the existing economic and security framework of the free world." Assessing events in Angola, Ethiopia, Afghanistan and other global hot spots, Mr. Haig said "one can only conclude that the era of 'the resource war' has arrived."

Most of the current concerns expressed during the resource war debate center on South Africa, from which the U.S. and other Western countries draw chrome, ferromanganese, vanadium, platinum-group metals and other important materials. Most of the West's cobalt comes from nearby Zaire and Zambia.

One side of the argument holds that, while the Russians are mainly self-sufficient in these important minerals and the U.S. is not, radicalization of southern Africa still would deny free access to this storehouse. Thus U.S. foreign policy should be directed to strengthening Western influence in the region while domestic policy is directed toward stockpiling and building domestic capacity.

Those who demur (including some who may be quick to hop on Mr. Overton's inclination to describe the situation as less than a crisis) maintain that Southern Africa is as dependent on the West, particularly the U.S., as things are the other way around. The argument here is that even a radicalized southern Africa would be locked into the same trade patterns—or go broke, leaving the Eastern Bloc with another defeat in the region like the one that took place in the Sixties.

One catch in this argument, however, is what could happen in the interim because pragmatism tends to be sidetracked during political upheaval.

Most of the concerns expressed during a resource war debate center on South Africa.

About a year and a half ago, the South African government was dropping hints that it could use its mineral wealth as a lever to preserve its apartheid policies. Earlier this year, however, R. S. Lawrence, president of the Chamber of Mines of South Africa disavowed what he described as "a tendency to adopt a slightly heavy-handed approach in emphasizing the undoubted importance of South Africa's mineral resources to the West, the connotation being that these resources could, in certain circumstances, be used as political weapons."

Such an unwise approach, he said, tended to ignore the fundamentals of the situation. Veiled threats of summarily interrupted minerals supply would assist in undermining the country's reliability as a supplier and would encourage customers to intensify substitution and recycling, redesign for reduced consumption of critical materials, and search for alternate sources.

Meanwhile, the growing debate over the 'resources war' has heightened jitteriness over future availability of strategic materials in the U.S. and abroad. Even financially-pinched Great Britain is pursuing a limited procurement policy for more than a year now, with the effect limited by a continuing debate over how much the government and how much the private sector should contribute to the program.

France, which sent troops to Zaire's Shaba Province during the 1979 upheavals in that cobalt-producing region, put cobalt, platinum, silver, vanadium and zirconium at the head of a list of materials for stockpiling prepared several years ago. As is the case with other industrial nations in similar circumstances, France has been faced with the twin bogies of budgetary restraints and the high cost of money.

West Germany's move into the stockpiling arena is more recent. In mid-1979, Bonn selected five materials for stockpiling: cobalt, manganese, chromium, vanadium and blue asbestos. The program centered on having the principal consuming companies bear most of the burden of carrying a four-month supply and backing the companies with a revolving credit program.

M.I.T.'s Daniel Fine reported in mid-1980 that West Germany's unease about minerals availability was leading to a growing interest in Russia's mineral-rich storehouse in the eastern U.S.S.R. He suggested that Bonn's resource diplomacy might be seeking Soviet "neutrality" in southern Africa. Mr. Fine's report on the Soviet Union and the resource war at the AMC convention may throw a little more light on the matter.

It may be wishful thinking, but a lot more light could be used on the U.S.S.R.'s own strategic materials position. There is no "Russian Bureau of Metal Statistics" for Western specialists to consult, nor are there any "Russian Bureau of Mines" publications available either. There is general (and widely publicized) agreement that Russia is self-sufficient in most critical minerals, but this is not as monolithic as the Kremlin is.

Mr. Fine said earlier this year that he believed the Russians were stockpiling many materials for defense purpose and he doubted that the U.S.S.R. would resume exports of chromium and manganese in the foreseeable future. This view has found favor within the Reagan Administration and has reinforced its determination to stockpile materials as well.

While Russia today has to import only cobalt, Kremlin-watchers see this list expanding to chromium, titanium, aluminum, lead and zinc in the not-too-distant future. They note that Russia's archaic mining technologies have already forced sizable imports of lead from western sources. ☐

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EFFECTIVE SEPTEMBER 8, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	265	255	245	196
Buffalo	57	55	73	38
Pittsburgh	362	372	386	307
Youngstown	131	140	127	79
Cleveland	165	176	165	120
Detroit	176	189	176	103
Chicago	543	578	566	416
Cincinnati	107	112	102	63
St. Louis	87	83	77	58
Southern	245	250	218	191
Western	140	138	135	137
U.S. Production	2,278	2,348	2,270	1,708

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80c premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81

Steel Production, Composite Prices

(Effective September 8, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,278	2,348	87,430	74,428
Capability Utilization Rate	77.0	79.4	82.7	71.2

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	24.488	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 91.17	$ 91.83	$ 95.50	$ 93.17
No. 2 bundles	$ 62.50	$ 62.50	$ 62.50	$ 66.50

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$101.50	$103.50	$108.50	$ 99.50
No. 1 steel, Philadelphia	78.50	78.50	79.50	92.50
No. 1 steel, Chicago	93.50	93.50	98.50	87.50
No. 1 bundles, Detroit	94.50	94.50	97.50	91.50
Phos., Youngstown	105.50	106.50	106.50	94.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	96.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	119.50
No. 1 mach'y cast., Chi	127.50	127.50	127.50	119.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective September 8, 1981)

Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.20-85.00	84.75-85.00	9/8/81
Lead	42.00-46.00	44.00-46.00	8/20/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) — cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz.	$439.00
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$440-$450
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.91
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Aug. 31—Holiday
Sept. 1—669.91
Sept. 2—676.02
Sept. 3—675.06
Sept. 4—675.06

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	68
No. 2 copper wire	59
Light copper	50
No. 1 composition	68
No. 1 comp. turnings	66
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	29
Radiators	51

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39

Copper and Brass

No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	49	—50
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43

Lead

Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31

Nickel

Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115

Zinc

New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE SEPTEMBER 8, 1981

MATERIALS NEWSFRONT

(Effective September 8, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	119.00 to 120.00
No. 1 factory bundles (auto)	124.00 to 125.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	119.00 to 120.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	122.00 to 123.00
Heavy turnings	92.00 to 93.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	130.00 to 131.00
Scrap rails, random lgth	110.00 to 111.00
RR specialties	123.00 to 124.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	640.00 to 650.00
18-8 turnings	540.00 to 550.00

Chicago

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	105.00 to 106.00
No. 1 factory bundles (auto)	111.00 to 112.00
No. 2 dealer bundles	71.00 to 72.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	97.00 to 98.00
Shredder scrap	95.00 to 96.00
Machine shop turn.	45.00 to 46.00
Mixed bor. and turn.	46.00 to 47.00
Shoveling turnings	49.00 to 50.00
Cast iron borings	64.00 to 65.00
Low phos. forge crop	116.00 to 117.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	121.00 to 122.00
No.1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth	94.00 to 95.00
Reroller rails	124.00 to 125.00
Rails, 2 ft. and under	126.00 to 127.00
RR couplers and knuckles	119.00 to 120.00
RR car axles	174.00 to 175.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	102.00 to 103.00
Stove plate	99.00 to 100.00
Steel car wheels	109.00 to 110.00
Stainless	
18-8 bundles and solids	620.00 to 630.00
18-8 turnings	495.00 to 505.00
430 bundles and solids	120.00 to 125.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 77.00 to $ 80.00
No. 2 hvy. melting	67.00 to 70.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	108.00 to 111.00
No. 2 dealer bundles	50.00 to 53.00
No. 1 busheling	104.00 to 107.00
Shredder scrap	89.00 to 92.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	54.00 to 57.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	100.00 to 103.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	76.00 to 79.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to $ 74.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	43.00 to 44.00
No. 1 busheling	92.00 to 93.00
Drop forge flashings	71.00 to 72.00
Machine shop turn.	32.00 to 33.00
Mixed borings and turn.	28.00 to 29.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	42.00 to 43.00
Heavy breakable cast	58.00 to 59.00
Mixed cupola cast	76.00 to 77.00
Automobile cast	99.00 to 100.00
Stainless	
18-8 bundles and solids	590.00 to 600.00
18-8 turnings	440.00 to 450.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$100.00 to $101.00
No. 2 hvy. melting	64.00 to 65.00
No. 1 dealer bundles	103.00 to 104.00
No. 2 dealer bundles	60.00 to 61.00
Machine shop turnings	17.00 to 18.00
Shoveling turnings	27.00 to 28.00
Lphos. plate	105.00 to 106.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	88.00 to 89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles	111.00 to 112.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	101.00 to 102.00
Machine shop turn.	22.00 to 23.00
Mixed bor. and turn.	22.00 to 23.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	22.00 to 23.00
Cut structural & plates, 2 ft. and under	125.00 to 126.00
Low phos. punchings plate	125.00 to 126.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	129.00 to 130.00
Rails, 18 in. and under	130.00 to 131.00
Steel axle turnings	81.00 to 82.00
Railroad cast.	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 60.00 to $ 61.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 busheling	67.00 to 68.00
No. 1 dealer bundles	65.00 to 66.00
No. 2 dealer bundles	37.00 to 38.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	19.00 to 20.00
Low phos. plate	88.00 to 89.00
Structural and plate, 2 ft. and under	96.00 to 97.00
Rails, 2 ft. and under	74.00 to 75.00
Scrap rails, random lgth	54.00 to 55.00
No. 1 machinery cast	94.00 to 95.00
No. 1 cupola cast	62.00 to 63.00

St. Louis

No. 1 hvy. melting	$ 88.00 to $ 89.00
No. 2 hvy. melting	80.00 to 81.00
Foundry steel, 2 ft.	80.00 to 81.00
No. 1 dealer bundles	88.00 to 89.00
No. 2 bundles	75.00 to 76.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	88.00 to 89.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 88.00 to $ 89.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	88.00 to 89.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to [illegible]0.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	101.00 to 101.00
Rails, 18 in. and under	120.00 to 121.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	94.00 to 95.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to $ 77.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 18 in. and under	109.00 to 110.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	73.00 to 74.00
Heavy breakable cast	37.00 to 38.00
Drop broken cast	100.00 to 101.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 prepared solids	110.00 to 120.00
410 solids	100.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	52.00 to 54.00
No. 1 dealer bundles	75.00 to 77.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	75.00 to 77.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 82.00 to $ 84.00
No. 2 hvy. melting	71.00 to 73.00
No. 2 bundles	61.00 to 63.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	68.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

NO. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	84.00 to 86.00
No. 2 bundles	55.00 to 57.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	77.00 to 79.00
Cupola cast	96.00 to 98.00

EFFECTIVE SEPTEMBER 14, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	244	265	244	205
Buffalo	56	57	68	42
Pittsburgh	365	362	401	289
Youngstown	130	131	133	72
Cleveland	158	165	170	116
Detroit	156	176	166	103
Chicago	568	543	536	410
Cincinnati	102	107	112	72
St. Louis	68	87	82	62
Southern	246	245	221	188
Western	147	140	141	127
U.S. Production	2,240	2,278	2,274	1,686

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/23/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective September 14, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,240	2,278	89,670	76,175
Capability Utilization Rate	75.7	77.0	82.5	70.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	25.195	24.488	21.736
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 91.17	$ 91.17	$ 95.50	$ 94.50
No. 2 bundles	$ 62.50	$ 62.50	$ 62.50	$ 66.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$101.50	$101.50	$108.50	$103.50
No. 1 steel, Philadelphia	78.50	78.50	79.50	92.50
No. 1 steel, Chicago	93.50	93.50	98.50	87.50
No. 1 bundles, Detroit	93.50	93.50	97.50	93.50
Low Phos., Youngstown	103.50	105.50	106.50	101.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	106.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	121.50
No. 1 mach'y cast., Chi	127.50	127.50	127.50	119.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective September 14, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	83.50-84.00	83.00-84.00	9/11/81
Lead	40.00-46.00	42.00-46.00	9/ 2/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$451.25
Indium, 99.9% troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$430-$445
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$10.98
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in PENANG IN Malaysian dollars per kilo.)

Sept. 7—673.53
Sept. 8—674.68
Sept. 9—673.53
Sept. 10—673.15
Sept. 11—672.58

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	67
No. 2 copper wire	59
Light copper	50
No. 1 composition	68
No. 1 comp. turnings	66
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	29
Radiators	51

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	48	—49
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE SEPTEMBER 14, 1981

MATERIALS NEWSFRONT

(Effective September 14, 1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	119.00 to 120.00
No. 1 factory bundles (auto)	124.00 to 125.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	119.00 to 120.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	122.00 to 123.00
Heavy turnings	92.00 to 93.00
No. 1 RR hvy. melting	116.00 to 117.00
Rails, 2 ft. and under	130.00 to 131.00
Scrap rails, random lgth.	110.00 to 111.00
RR specialties	123.00 to 124.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	630.00 to 640.00
18-8 turnings	530.00 to 540.00

Chicago

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	87.00 to 88.00
No. 1 dealer bundles	105.00 to 106.00
No. 1 factory bundles (auto)	111.00 to 112.00
No. 2 dealer bundles	71.00 to 72.00
Unburned bundles	59.00 to 60.00
No. 1 busheling	97.00 to 98.00
Shredder scrap	95.00 to 96.00
Machine shop turn.	45.00 to 46.00
Mixed bor. and turn.	46.00 to 47.00
Shoveling turnings	49.00 to 50.00
Cast iron borings	64.00 to 65.00
Low phos. forge crop	116.00 to 117.00
Low. phos. punchings plate ¼ in. and heavier	127.00 to 128.00
Low phos. 2 ft. and under	121.00 to 122.00
No.1 RR hvy. melting	97.00 to 98.00
Scrap rails, random lgth.	94.00 to 95.00
Reroller rails	124.00 to 125.00
Rails, 2 ft. and under	126.00 to 127.00
RR couplers and knuckles	119.00 to 120.00
RR car axles	174.00 to 175.00
No. 1 machinery cast	127.00 to 128.00
Cupola cast	102.00 to 103.00
Stove plate	99.00 to 100.00
Steel car wheels	109.00 to 110.00
Stainless	
18-8 bundles and solids	615.00 to 625.00
18-8 turnings	490.00 to 500.00
430 bundles and solids	120.00 to 125.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 77.00 to $ 80.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	108.00 to 111.00
No. 2 dealer bundles	50.00 to 53.00
No. 1 busheling	104.00 to 107.00
Shredder scrap	88.00 to 91.00
Machine shop turn.	36.00 to 39.00
Mixed bor. and turn.	36.00 to 39.00
Shoveling turnings	53.00 to 56.00
Clean cast chemical borings	66.00 to 69.00
Low phos. 5 ft. and under	97.00 to 100.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	76.00 to 79.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to $ 74.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	93.00 to 94.00
No. 2 bundles	43.00 to 44.00
No. 1 busheling	92.00 to 93.00
Drop forge flashings	71.00 to 72.00
Machine shop turn.	32.00 to 33.00
Mixed borings and turn.	28.00 to 29.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	42.00 to 43.00
Heavy breakable cast	58.00 to 59.00
Mixed cupola cast	76.00 to 77.00
Automobile cast	99.00 to 100.00
Stainless	
18-8 bundles and solids	590.00 to 600.00
18-8 turnings	440.00 to 450.00
430 bundles and solids	135.00 to 145.00

Youngstown

No. 1 hvy. melting	$100.00 to $101.00
No. 2 hvy. melting	64.00 to 65.00
No. 1 dealer bundles	103.00 to 104.00
No. 2 dealer bundles	60.00 to 61.00
Machine shop turnings	17.00 to 18.00
Shoveling turnings	27.00 to 28.00
Lphos. plate	103.00 to 104.00
Electric furnace bundles	105.00 to 106.00
Galvanized bundles	88.00 to 89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to $ 94.00
No. 2 hvy. melting	62.00 to 63.00
No. 1 dealer bundles	109.00 to 110.00
No. 1 factory bundles	111.00 to 112.00
No. 2 bundles	53.00 to 54.00
No. 1 busheling	101.00 to 102.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	22.00 to 23.00
Cut structural & plates, 2 ft. and under	125.00 to 126.00
Low phos. punchings plate	125.00 to 126.00
Drop forge flashings	66.00 to 67.00
Foundry steel, 2 ft. & under	101.00 to 102.00
No. 1 RR hvy. melting	118.00 to 119.00
Rails, 2 ft. and under	129.00 to 130.00
Rails, 18 in. and under	130.00 to 131.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	550.00 to 560.00
18-8 turnings	425.00 to 450.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 60.00 to $ 61.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 busheling	67.00 to 68.00
No. 1 dealer bundles	65.00 to 66.00
No. 2 dealer bundles	37.00 to 38.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	19.00 to 20.00
Low phos. plate	88.00 to 89.00
Structural and plate, 2 ft. and under	96.00 to 97.00
Rails, 2 ft. and under	74.00 to 75.00
Scrap rails, random lgth.	54.00 to 55.00
No. 1 machinery cast	94.00 to 95.00
No. 1 cupola cast	62.00 to 63.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 88.00 to $ 89.00
No. 2 heavy melting	83.00 to 84.00
No. 1 dealer bundles	91.00 to 92.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	88.00 to 89.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	102.00 to 103.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	101.00 to 101.00
Rails, 18 in. and under	120.00 to 121.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	94.00 to 95.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to $ 77.00
No. 2 hvy. melting	72.00 to 73.00
No. 1 dealer bundles	94.00 to 95.00
No. 2 bundles	50.00 to 51.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 18 in. and under	105.00 to 106.00
Rails, random length	90.00 to 91.00
Rails, 2 ft. and under	112.00 to 113.00
No. 1 cupola cast	73.00 to 74.00
Heavy breakable cast	37.00 to 38.00
Drop broken cast	100.00 to 101.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 prepared solids	110.00 to 120.00
410 solids	100.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 60.00 to $ 62.00
No. 2 hvy. melting	52.00 to 54.00
No. 1 dealer bundles	75.00 to 77.00
No. 2 bundles	33.00 to 35.00
No. 1 busheling	75.00 to 77.00
Shredder scrap	74.00 to 76.00
Machine shop turn.	8.00 to 10.00
Shoveling turnings	18.00 to 20.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	56.00 to 58.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 52.00 to $ 54.00
No. 2 hvy. melting	44.00 to 46.00
No. 1 dealer bundles	39.00 to 41.00
No. 2 dealer bundles	24.00 to 26.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 50.00 to $ 52.00
No. 2 hvy. melting	39.00 to 41.00
No. 1 dealer bundles	37.00 to 39.00
No. 2 dealer bundles	20.00 to 22.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	114.00 to 116.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 80.00 to $ 82.00
No. 2 hvy. melting	69.00 to 71.00
No. 2 bundles	59.00 to 61.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

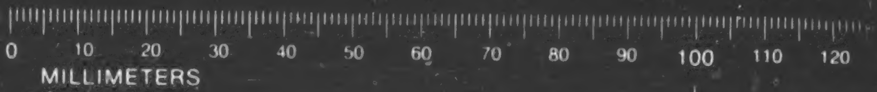
Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	88.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	84.00 to 86.00
No. 2 bundles	55.00 to 57.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	77.00 to 79.00
Cupola cast	96.00 to 98.00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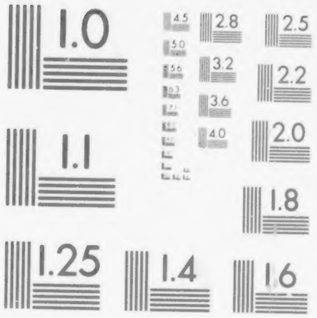
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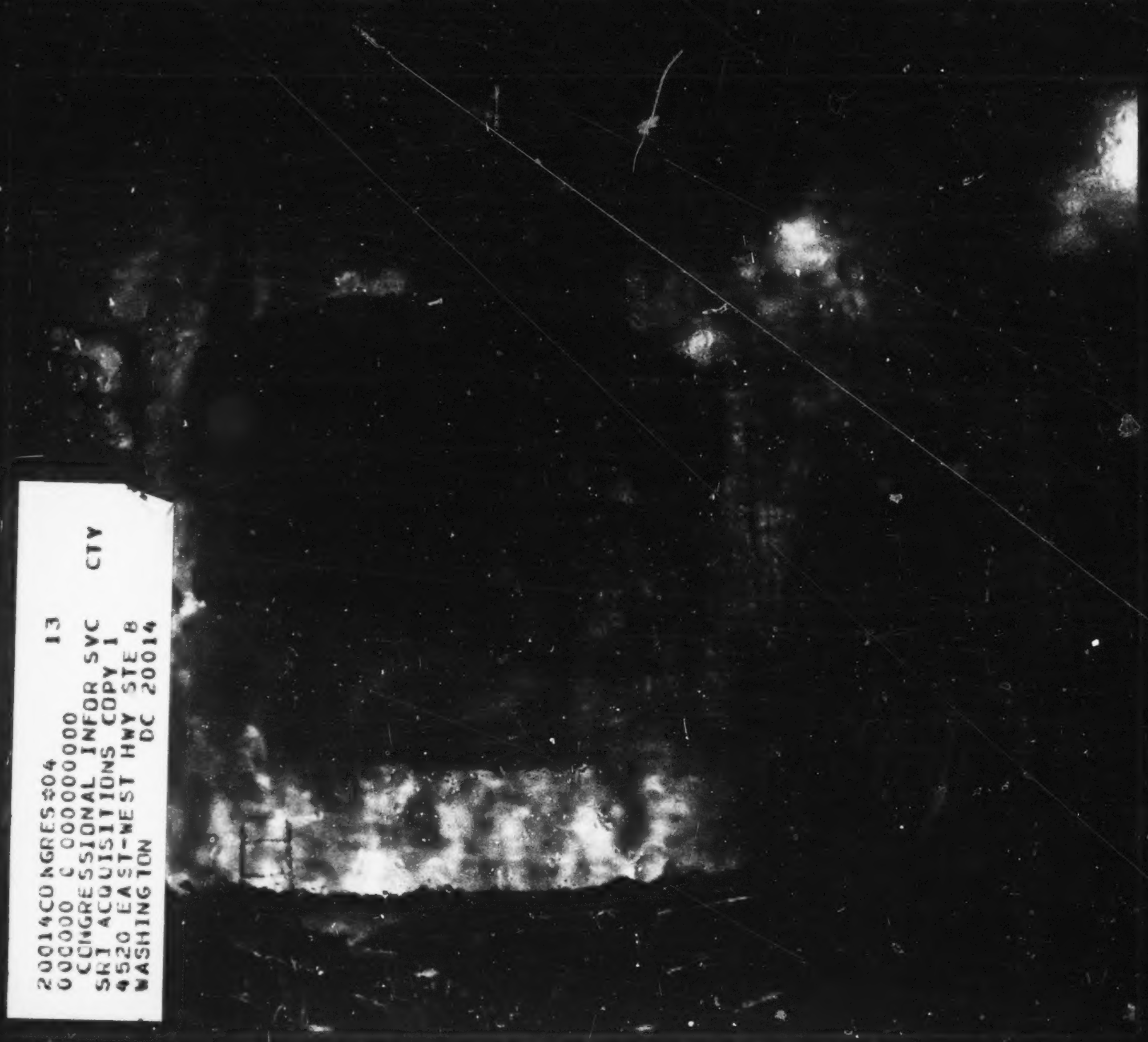

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HOW 'COOLING IT' HELPS ELECTRIC FURNACES PRODUCE MORE

IRON AGE

VOL. 224, NO. 28

OCTOBER 5, 1981

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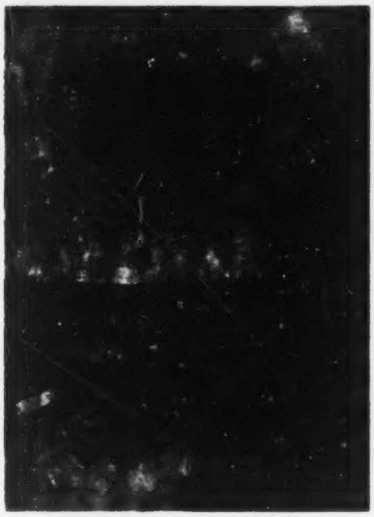

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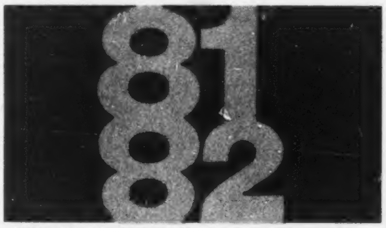


What's behind the aluminum industry slowdown?

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

QUARTERLY FORECAST

WILL REAGANOMICS GET A CHANCE TO GO TO WORK?

Reagan's recovery program must hurdle three blocks to get going—a sluggish economy, high interest rates and a big deficit.

An economist recently completed an analysis of President Reagan's epic long-term economic recovery program. He used words like "great" and "wonderful" in describing it.

Then he said, very soberly, "But we still have the problem of getting from here to there."

That concern—shared by many others—puts a special importance on just how well business does in the current quarter and in the opening quarter of 1982. That appears to be the 'transition' time span before the Reagan program can really begin to take hold in the economy.

What could now stop the program cold in its early tracks?

In this closing quarter of 1981, it appears that three big blocks stand in the path.

One, of course, is the sluggish economic growth that has gripped the economy for some time now.

Secondly, there are those very real and present high interest rates.

And finally, there is the national uproar about the suprisingly large Federal budget deficit that looms for fiscal 1982. Concern here has dampened the confidence of both businessmen and consumers in the Administration's recovery program.

So, to the first question first—when will the economy start picking up?

That is an especially key question in the closing quarter of a 'disappointing' 1981. A sluggish growth rate this year follows negative growth in 1980 (minus .2 pct). And the two years previous to 1980 showed successive steps downward in the U.S. economic growth rate.

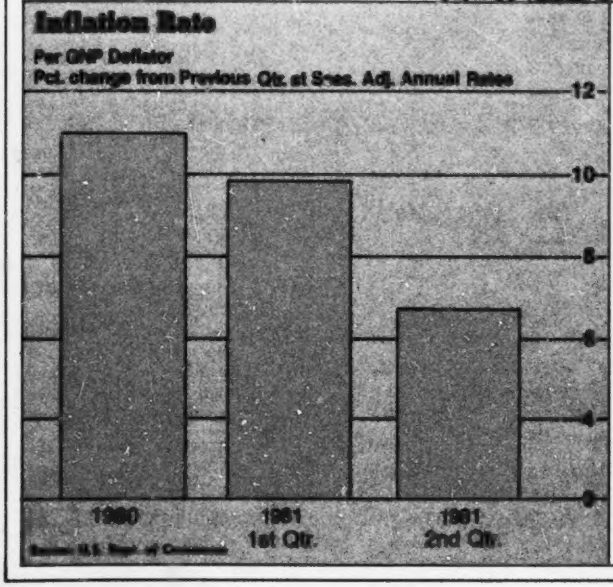
Understandably, one metalworking industry executive asks, "What happened to the good, old business cycle? The curve is supposed to move **both** ways."

Actually, the business cycle is still at work and probably is scraping bottom in its present phase.

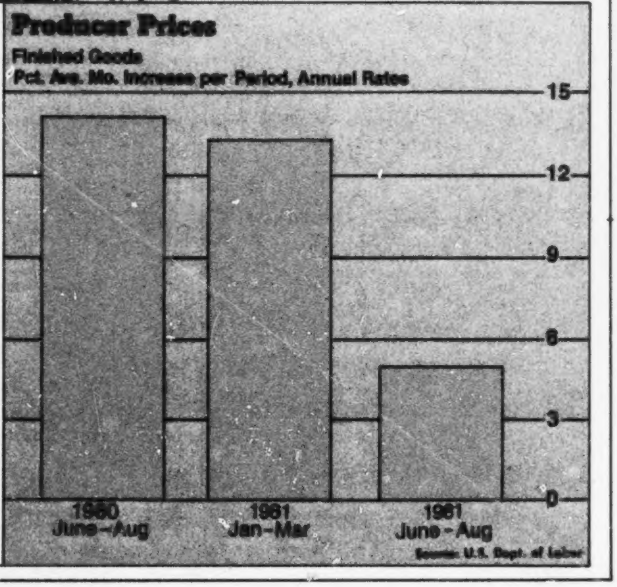
Iron Age, in preparing this outlook report, found that forecasts for the closing quarter this year, among a broad sampling of economists, ranged from "slightly minus growth" to a "plus 2 pct annual growth rate."

Too, the forecasts for 1982 were unanimous in calling for an upbeat year. The Congressional Budget Office, with a past outstanding record for on-target forecasts to its credit, looks for a plus 4 pct annual growth rate next year.

Economists, in about all cases, see 1982 as a year of progressive economic improvement. Former Presidential economic adviser Alan Greenspan sees a 5.2 pct GNP growth rate run-



Source: U.S. Dept. of Commerce



Source: U.S. Dept. of Labor

ning by the end of next year. And Otto Eckstein of Data Resources, Inc., sees a plus 5 pct rate going by the third quarter next year. These seem to be representative forecasts of the economic fraternity for 1982.

The big reason for seeing at least the **start** of a turning point in the economy this year lies in the recent cooling of inflation. In the third quarter last year, the GNP deflator, the economy's most comprehensive price measure, showed an inflation rate (annual) of 10.7 pct. In the next two successive quarters, this rate fell to 9.8 pct and 6.6 pct.

If the seers are on target even in their forecasts of direction, let alone magnitude of change, this year will end up as a standoff, but next year will be a great improvement. This means the Reagan program should make it over the transition chasm of the present quarter and the opening period of 1982.

But stop—there are those interest rates. This is the caveat card in the back pockets of just about all forecasters these days.

For example, both Mr. Greenspan and Mr. Eckstein say to scratch their upbeat forecasts for the final quarter this year and for 1982 if interest rate levels hold or move up.

However, as this report is prepared, it does look like interest rates are moving down from their recent peaks. Across the entire credit spectrum, interest rates have eased downward.

Simply, if interest rates continue that course, then it is good news for the closing months of this year, and almost certainly for all of next year. However, if interest rates resume their climb, business will be back on the slow road to nowhere.

Interest rates may bobble in the near future—as will likely other price measures. But it does not seem likely they will again go into the pale blue as they did recently.

One reason for this hopeful view is the strength and breadth of the recent interest rate easing. In other words, the downward trend itself is good reason for hope.

But, perhaps, a stronger hook on which to peg hopes of a softening of interest rates, is a political one. It just stands to reason that a lot of pressure is being brought to bear on the Fed. It is almost inconceivable that the President's economic recovery plan for the nation will be allowed to be, as one B-school professor puts it, "sacrificed on the altar of high interest rates."

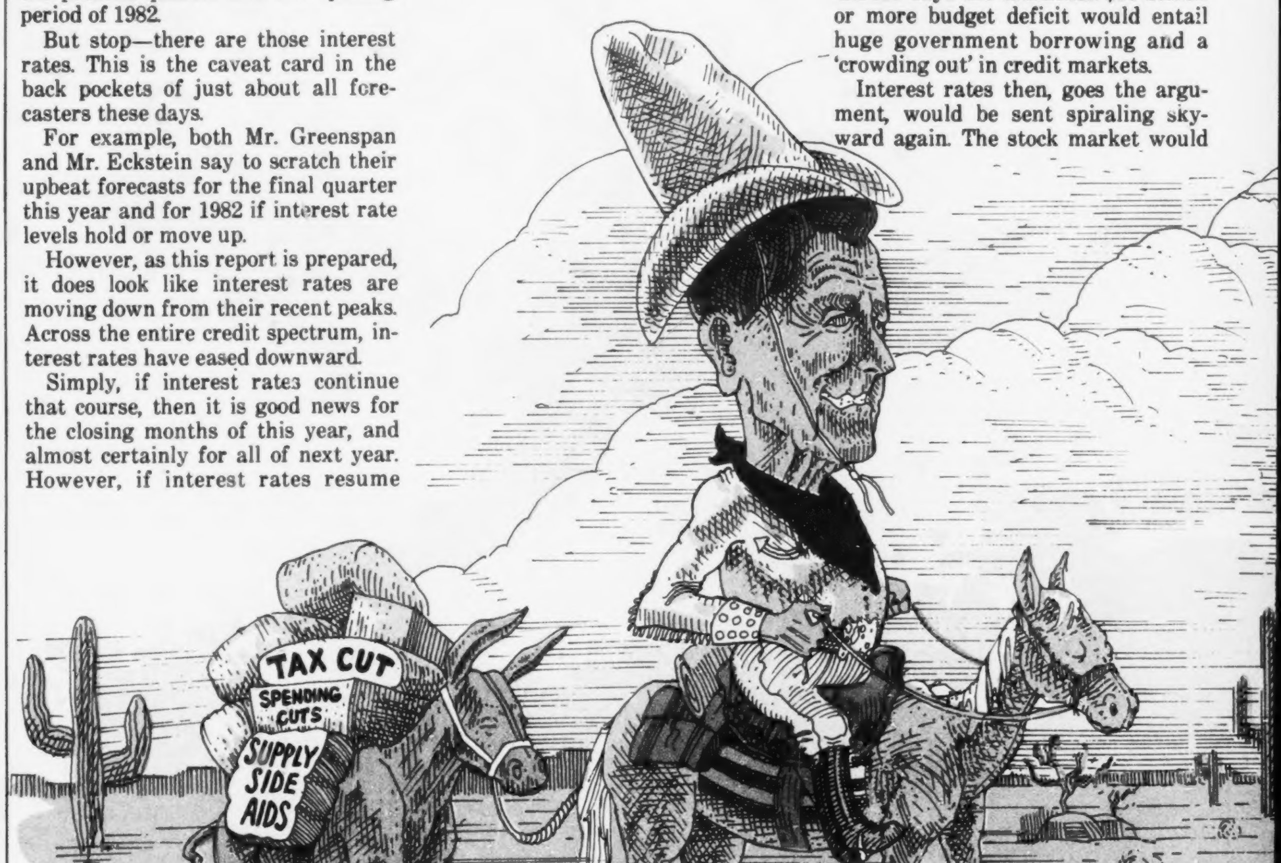
Already raging are debates on the independent position of the U.S. central bank. The question is raised (in view of unprecedented turmoil in both domestic and international finances) whether it is a good idea anymore to have the U.S. central bank independent of the mainstream of government.

The Fed's governors must certainly be aware of this new restiveness on the part of many politicians, businessmen and bankers over their money supply policies that spawn 'crippling' interest rates.

How about the third block—the high and worrisome Federal budget deficit for fiscal 1982?

Wall Street has warned the President that if the 1982 fiscal year deficit isn't pared back—deeply and quickly—then the recovery program may never get off the ground. The 'Street' says the estimated $60 billion or more budget deficit would entail huge government borrowing and a 'crowding out' in credit markets.

Interest rates then, goes the argument, would be sent spiraling skyward again. The stock market would



fall, credit-starved business would lay off workers and the economy would slow to such a point that the Reagan program wouldn't be able to whip it into anything like a gallop.

It's a dark picture as drawn. But the Wall Street arguments are based on premises that are, at best, questionable.

The 'bread and butter' issue with the Wall Streeters is that the stock market falls when investors' money flows from equity markets to credit markets as interest rates rise. And few things, they contend, push interest rates up as much as big Federal budget deficits, which have to be financed and thus create great demand for credit.

Treasury Secretary Donald T. Regan, former head of the securities industry giant, Merrill Lynch & Co., brushes aside the arguments made by those in his former industry.

"They have been using old information and old cliches to explain the market decline," he says.

It looks that way.

Wall Streeters say that Federal budget deficits must shrink if stock prices are to firm up. So—how come in 1978, when the deficit shrank by a whopping 40 pct, stock prices went **down?** Measured by the Dow-Jones Industrial Stock Averages (DJI), prices went down more than 8 pct.

A fluke year?

Well, look at last year. The Federal budget deficit in 1980 more than doubled ($28 billion to $60 billion). This must have crippled stock prices—right? Wrong. The DJI, in the face of this swelled deficit, went **up**—up by 6 pct.

These comparisons are on a calendar year basis.

In sum, it seems that all the supposed blocks on the current economic scene are not strong enough to keep the Reagan program from soon taking hold of the economy.

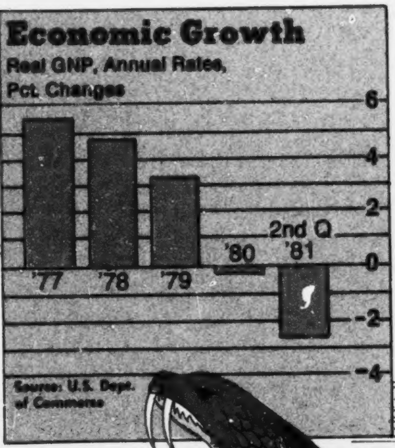
Consumer spending might soon be stronger than presently forecast. The combination of lessened inflation and tax cuts will give a double-barrel lift to real incomes and could be expected to result in exceptionally big increases in spending power.

And, best news to metalworking industries, the traditional lag of capital equipment and heavy goods lines in times of recovery may not occur this next time around. This is because demand for big-ticket items has been so long backed up. (Business fixed investment in real terms at mid-year 1981 was actually several billion dollars **below** what it was in 1979).

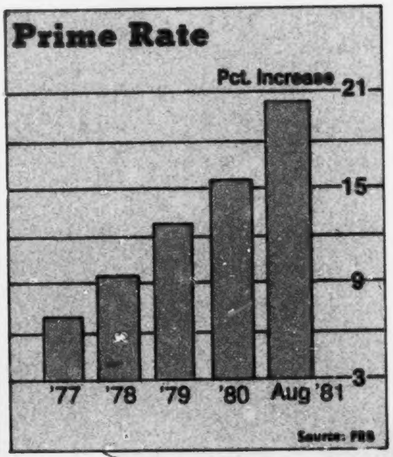
When that deferred demand is matched up with the new faster tax write-offs for plant and equipment investment in the Reagan program, it adds up to almost certain big action and quick action in terms of recovery for metalworking.

The likely starting time for the recovery appears to be the opening quarter of next year.

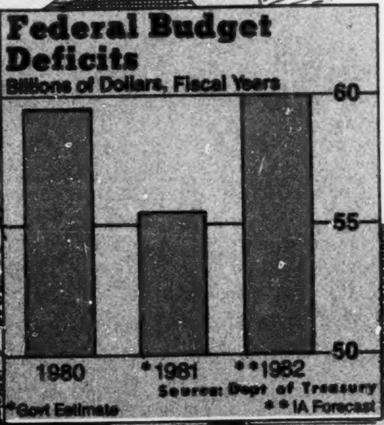
J. D. Baxter



Source: U.S. Dept. of Commerce



Source: FRB

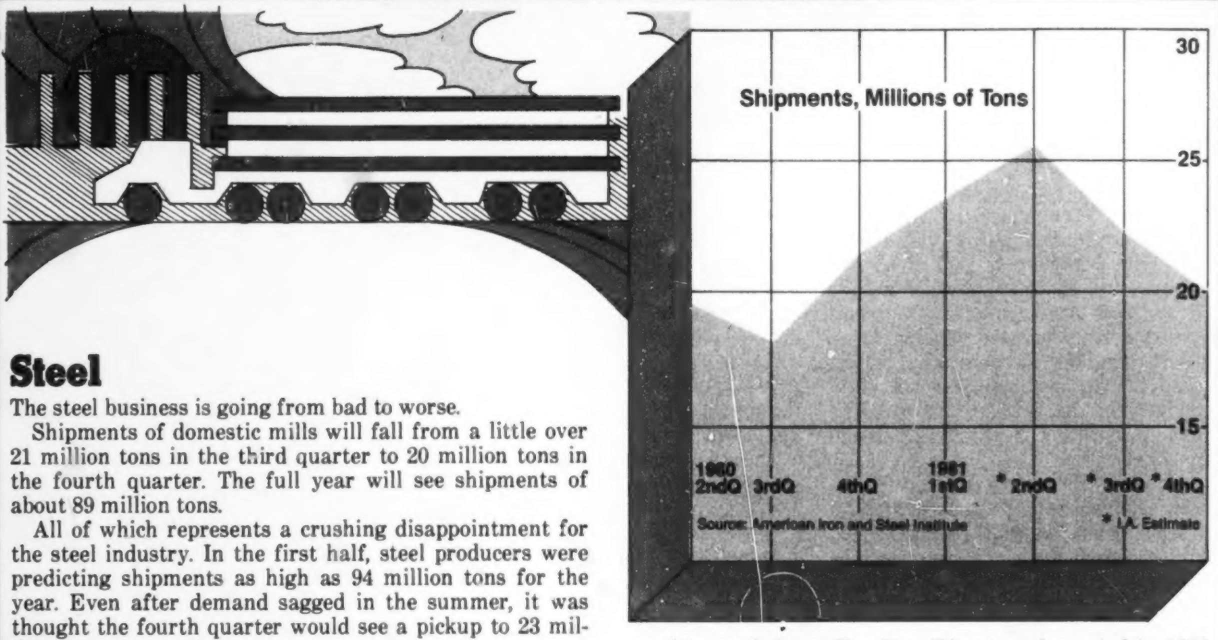


Source: Dept of Treasury

*Govt Estimate

**IA Forecast

QUARTERLY FORECAST



Source: American Iron and Steel Institute

Steel

The steel business is going from bad to worse.

Shipments of domestic mills will fall from a little over 21 million tons in the third quarter to 20 million tons in the fourth quarter. The full year will see shipments of about 89 million tons.

All of which represents a crushing disappointment for the steel industry. In the first half, steel producers were predicting shipments as high as 94 million tons for the year. Even after demand sagged in the summer, it was thought the fourth quarter would see a pickup to 23 million tons.

Just on the basis of seasonal factors, a fall improvement was a reasonable expectation. Instead, demand is drifting downward.

Steel producers don't think their market or the economy is collapsing. High interest rates are seen causing an inventory correction. This should not last too long because there isn't a lot of excess steel around.

The absence of a seasonal lift is partly due to the cautious scheduling and procurement of the auto industry. Only 1.6 million cars will be built in the fourth quarter. Although this will be up from 1.4 million in the third quarter, it is not enough to generate much added volume for steel companies.

One of the most worrisome aspects of the slump is that it has been accompanied by hefty steel imports. The combination of high imports and low demand has proven disastrous in the past.

In 1977, domestic steel prices collapsed under the weight of imports. Steel profits disappeared and a number of steel plants were scrapped.

The 1977 sequence brought on the Trigger Price Mechanism and other measures designed to help the steel industry. The trigger system never fully satisifed domestic mills, but until recently it seemed to have a moderating effect on imports.

Since April, however, imports have been running over 1.6 million tons a month. Foreign mills have reportedly become increasingly bold in their pricing. Midwestern markets, which should be the most difficult to penetrate under the trigger system, are being hit with foreign product.

In July, over 530,000 tons of foreign steel were delivered to Midwestern sites. That was up 138 pct from July of 1980. Only the Gulf Coast took in more imported steel in July.

There is no way of checking current sales activity of foreign mills, but domestic producers say imported material is being offered at bargain prices for the fourth quarter and later.

The U.S. market can absorb large quantities of foreign steel in good times. The 21 million tons imported in 1978 did not cause disruption because domestic mills were shipping 98 million tons.

In today's weak market, the price pressure exerted by imports has got to be enormous. Foreign steel accounted for 20 pct of U.S. supply in July. The foreign share could be greater in the fourth quarter. Under these conditions, domestic mills will have trouble keeping their prices on a separate tier.

The difficulties will be increased if the industry fails to come up with a new Experimental Negotiating Agreement (ENA).

Designed to prevent general steel strikes, ENA was created partly to eliminate surges of foreign steel in the period before a strike deadline.

Steel contracts don't expire until 1983, but if a new ENA is not worked out, the strike threat could cause users to start lining up foreign sources in 1982.

So far, the market slump has not brought any cuts in steel capital programs. There has been some juggling of assets. Jones & Laughlin Steel Corp. recently announced the shutdown of wire and rod facilities at Aliquippa, Pa. This takes J&L out of these product lines. Raw steel will be diverted into seamless tubing and other profitable products.

This seems to be more a matter of long-term strategy than a reaction to the slump. The major mills have been backing away from the merchant markets. The big push is toward the energy field. Three new seamless mills are being built to serve this market.

If the slump continues, however, capital programs will be slashed. In 1974, steel companies announced plans for adding 20 million tons of new steel capacity. When the market collapsed in 1975, most of the plans were scratched.

The current capital boom was not triggered by strong demand. The mills set out to modernize with most markets still in a sluggish state.

There probably won't be a sudden cutoff, but if business continues to lag, capital spending will eventually be affected.

QUARTERLY FORECAST

Nonferrous Metals

With the national economy apparently still preoccupied with the business of making money with money, be it lending cash out at high rates of interest or bankrolling king-sized corporate acquisitions, producers of industrial raw materials and things made from them face tough sledding right through the fall and winter months.

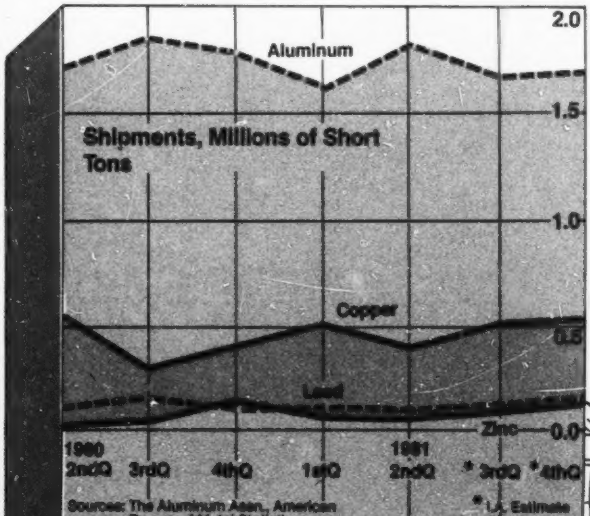
High interest rates, whether the tools or the consequences of Official Washington's battle with inflationary expectations, continue to keep a stranglehold on such key metals-using businesses as the automotive, appliance and construction industries. And the high cost of money continues to discourage metal users from maintaining adequate inventories while their suppliers are trying to keep their own stocks from getting out of hand.

The tax cuts and other features of the Reagan Administration's tax program should start freeing up some extra cash soon, but there is as yet little guarantee that this money won't be channeled into the money markets as well.

Copper production was down in the first half of this year but, while the producers are maintaining a tight rein on operations, third quarter output carried the total over last year's pace because of the 1980 mine and smelter strikes. Producers' stocks of refined copper began moving upward after midyear, but hedge market stocks were being held in check.

U.S. producer shipments of refined copper are running ahead of the 1980 rate, reflecting in part the effect of the strikes on last year's delivery rate. Hedge markets shrugged off the start of the post-Labor Day "pickup" season, a mine strike in Peru and the threat of a smelter strike in Canada, but copper vendors still think the price recovery will be pretty rapid once the economy is shunted onto a better track.

Aluminum production is starting to drop after having run slightly ahead of last year's record-breaking pace right through Labor Day. The producers had been expecting that 1981 would prove to be the mirror image of 1980 by dipping in the first half and moving upward in the second half. The anticipated recovery failed to materialize by midyear and, by the end of the third quarter, the forecasts for recovery were stretching out as far as the start of the second quarter of 1982.



Sources: The Aluminum Assn., American Bureau of Metal Statistics

* I.A. Estimate

This year was a mirror image of 1980 in one sense, however. Last year, imports were down and exports, particularly of ingot and scrap, set new records. The traffic this year has been flowing in the other direction.

Free world primary aluminum producers entered the second half of 1981 with ingot stocks nearly 1.1 million short tons higher than they were a year earlier. Most of the production curbs to date have been accounted for by the major U.S. producers—and by the Japanese producers struggling with high production costs and heavy imports.

U.S. producers clung to their 76¢ to 80¢ published prices for primary ingot while spot prices on the international market rattled around the 55¢ to 59¢ a lb bracket well into September.

The integrated U.S. producers added about 290,000 tons, or 14 pct, to their inventories of ingot, mill products and scrap during the first half of the year and there was further accumulation after midyear. The increase in stocks of producers outside the U.S. aggregated about 230,000 short tons in the same six-month period.

The price of lead rode the rollercoaster during midsummer, beginning with a smart upward spiral based on the impact of strikes on supply, anticipated Russian buying on Western markets and talk of more plant closings because of economic pressures, environmental costs and the like. U.S. producers managed to move lead prices up as much as 7¢ a lb before late summer doldrums set in and prices were forced into partial retreat.

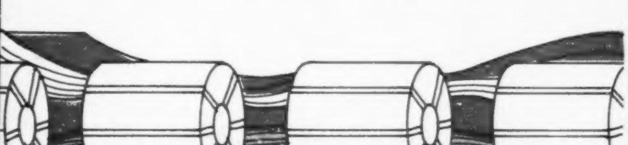
Domestic lead industry shipments were down about 8 pct in the first two-thirds of the year and it took a 10 pct drop in production to keep inventories from rising.

The zinc producers also are looking for higher prices in the fourth quarter. Industry shipments through August were keeping pace with 1980 volume, but shipments last year were nothing to write home about. The main impetus seems to be a worldwide tightness in supply of zinc concentrates aggravated by mine strikes in Ireland and Missouri.

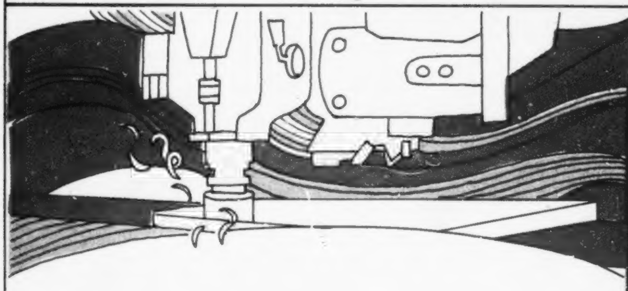
Domestic zinc producers' stocks going into September were less than half what they were a year earlier, but still were trending upward from a very low 21,052 tons held in May 1981. The announcement by Gulf Resources and Chemical Corp. that it would close its Bunker Hill zinc, lead and silver mining operations in Kellogg, Idaho at the end of this year also threatens to reduce supply.

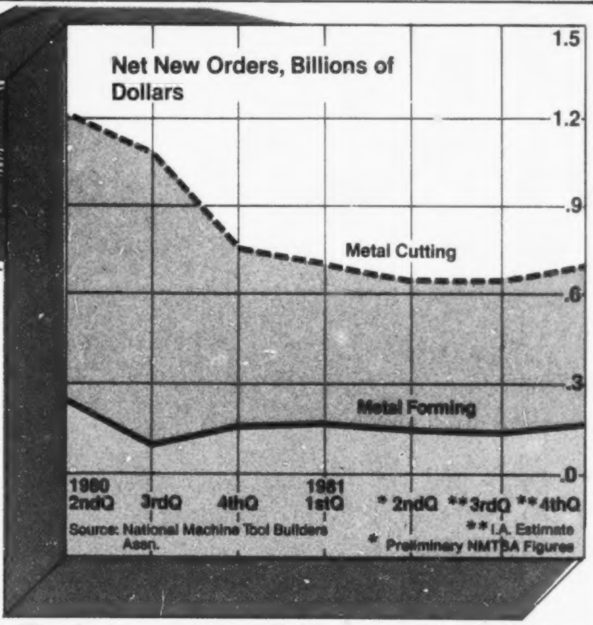
Inclinations to write off chances for a meaningful pickup in fourth quarter business have prompted Amax Inc.'s Climax Molybdenum division to curb production. Moly output by the world's largest producer will be down 12.6 pct this year, a drop of nearly 13 million lbs.

Nickel demand also is down and so is pressure on prices. Inco Ltd.'s Thompson, Manitoba operations went on strike in mid-September but producer stocks, stainless scrap supplies and merchant nickel are freely available.



QUARTERLY FORECAST





Source: National Machine Tool Builders Assn.

** I.A. Estimate

* Preliminary NMTBA Figures

Machine Tools

For most machine tool makers, the real question for the next quarter and for every quarter after is how to respond to imports from Japan and other countries.

Reaganomics and super-high money costs have only helped the overseas supplier some industry sources say.

Others say, the prime rate is a short-term problem, and it's a problem for our foreign competitors as well.

On the one hand, industry observers say that the backlog in machine tool orders can keep the industry moving at a rapid pace, while the others express a more pessimistic outlook.

"Backlogs evaporate overnight," says one industry analyst. "The last two quarters of 1981 are the most mysterious I've considered in years. Clearly it is the prime that is causing a lot of the problems and slowdown."

According to one industry president it's a lot more than just high interest rates. "There is a serious recession in many machine tool markets."

"The third quarter seems to be turning out flat compared to the second with the hope of some better figures in the final quarter," adds another analyst.

"Some very good machine tool customers are going right ahead with some productivity plans. Some others are hesitating," he adds.

"When GM said it was closing the Institute (General Motors Technical Institute), I thought the company was really contracting," says a machine tool executive. "Last year we heard them say we're going to have to see across the recession. We were expecting them to say it's worth the interest rate.

"It's clear to all of us that some customers believe a big drop (say something of 3 points) in the prime is imminent, or at least only a few months off. Besides that, now we have a military cut that some people say is nothing and others say is dangerous. It's all a case of "wait until the smoke clears," he says.

"There's a huge market out there for NC, for example, in the smaller, job shop. Unfortunately the Japanese are going after it more aggressively than many American tool makers," adds one industry critic. "It would be interesting to see how much the overseas companies are getting in terms of orders," he adds.

A few in the industry expect the last quarter of 1981 to show some sharp upward movement as we head into 1982.

"There is some concern about the high cost of money, but its been quite high for sometime now. We feel the reason for the present slowdown in new orders is more a matter of the market itself," says another industry source. "Perhaps the U.S. industry isn't selling as aggressively as it could," he says.

His point: "There will be more attention to the market's criticisms about U.S. equipment in the coming months."

"The last quarter of 1981 will reflect it," he predicts. "There's no recession at all for us to passively accept as permanent the intrusions from overseas in the U.S. machine tool market."

Aerospace markets, meanwhile remain strong and are expected to stay strong well into 1982 for certain kinds of machine tools.

With some significant increases in military-related business soon, the last part of 1981 could see a sharp increase in orders.

Further good news for the machine tool industry comes from the farm equipment and off-highway companies.

While that market has been depressed in terms of sales, several of the large companies in the business have remained steady buyers of machine tools.

"Some of those big outfits are moving right ahead with major buys for productivity improvement even while their own sales are low," says one tool company analyst. Several companies cite Caterpillar's continuing modernization as an example.

And, a recent huge $500 million order from Ford for diesel engines may translate into $35 million in new tooling orders from International Harvester, sources add.

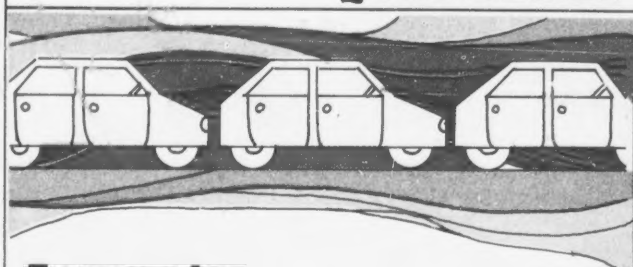
The mobile home and recreational vehicle market is also showing some signs of improvement after an extended recession due to fuel costs and shortages, adds the analyst. Newer, fuel-efficient engines and light-weight materials, according to a recent survey, have interested the market again in campers and the like.

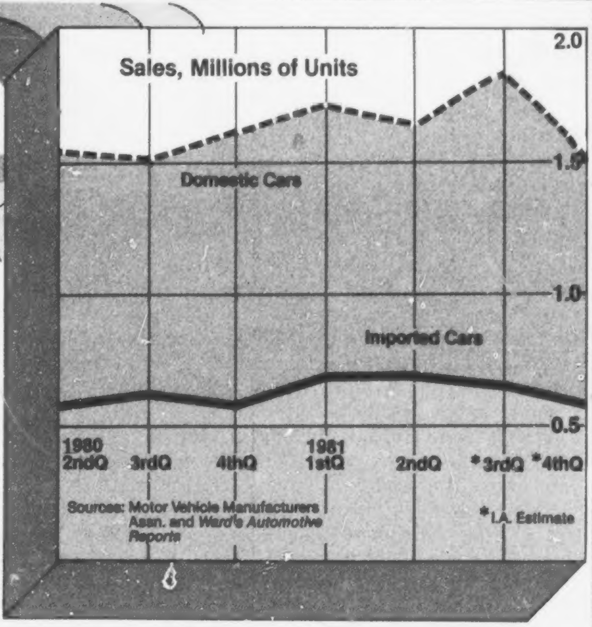
"We may see some increase in power-plant related business due to that towards the end of the fourth quarter," adds one machine tool manufacturer.

All these market factors, including Defense spending, could produce a very significant upturn in business by the end of the year for machine tool makers. How much? One analyst suggests "a 10 pct better dollar figure for new orders in the fourth quarter over the third." Others see a smaller improvement, but improvement nonetheless.

Others note that it's not the prime rate as much as fear of a recession that is causing the slowdown in new orders. Talk, if not evidence, of an induced recession may be the real reason for the sluggish demand for new machine tools.

QUARTERLY FORECAST





Sources: Motor Vehicle Manufacturers Assn. and *Ward's Automotive Reports*

*I.A. Estimate

Automotive

Fourth-quarter sales traditionally start off with a bang when the new models are introduced in October and altogether account for a healthy 25 pct of annual sales. This year probably won't follow that pattern, for three reasons.

First, incentives that boosted sales in August and September have drained sales from the fourth quarter.

Auto analysts usually figure that each month of incentives drains sales from one following "payback" month. That formula would mean that October and November will pay back the incentive-motivated high sales of July and August. But automakers have used rebates and other incentives with such regularity that at least one analyst in a Big 3 company no longer is certain how to figure their effect:

"When rebates were new, people couldn't anticipate them. Rebates pulled sales only from the future. Now people are starting to expect them and wait for them. They may be pulling sales from both the past and the future—customers who were waiting for them and customers who were lured into buying ahead of time because of them."

Though incentives borrow from Peter to pay Paul, sales strategists will likely continue using them.

"Even in good years," says one sales executive, "I expect we'll use incentives to solve short-term problems with inventory and model makes."

Second, all the Big 3 have announced price increases of 4.7 to 7.7 pct that will take effect in the fourth quarter. These will tend to dampen sales as much as incentives boosted them.

Third, the incentives did the job of clearing inventory, but that means that fewer of the cheaper models carried over from 1981 will be available in the fourth quarter.

Consensus throughout the auto industry, therefore, is that sales will drop from third-quarter levels.

The prime reason for depressed sales, automakers say, continues to be high interest rates.

"Interest rates," says one vice president, "strongly affect public perception of when it's right to buy. They seem to be a symbol of something wrong with the economy that suggests that this is not a good time to make a commitment to a big-ticket item like a car." This is true, he says, even though financing rates for new cars are not tied directly to the prime.

"In Michigan, which is at about the national average, the average cost of financing a car has gone up very slowly over the past three years—from about 12 to 15 pct. That's much less dramatic than the movement in the prime, yet it's the movement in the prime that seems to affect buyers' thinking."

Assistance programs by automotive financial companies have helped cushion dealers against the prime, so dealer floor costs are not tied directly to the prime, either. Still, low sales have thinned their ranks considerably. Incentive programs have been aimed primarily at keeping sales volume high enough to keep them afloat, but one executive commented: "They used to make their profit primarily on volume. Now they've got to make it through markup."

"There's got to be a significant improvement in the economy before car sales will rise," says one automotive sales executive. "I don't expect anything like that until next summer."

Still, automakers find some reasons for hope.

"The products to be offered in the fourth quarter are matched better to the market than any in a long time," says one auto analyst.

Import sales should fall off in the fourth quarter. The voluntary restriction on Japanese imports should finally begin to affect inventory levels of those cars here. That should raise their prices, which should reduce demand.

"Car sales have been artificially depressed in the last two years," says the vice president, "by low interest rates and low consumer confidence in the economy. There's no data we can find that suggests that anything that's happened in the last two years is normal. So I'm very optimistic about the long term. When there is a significant drop in the interest rates, the pent-up demand for cars will explode."

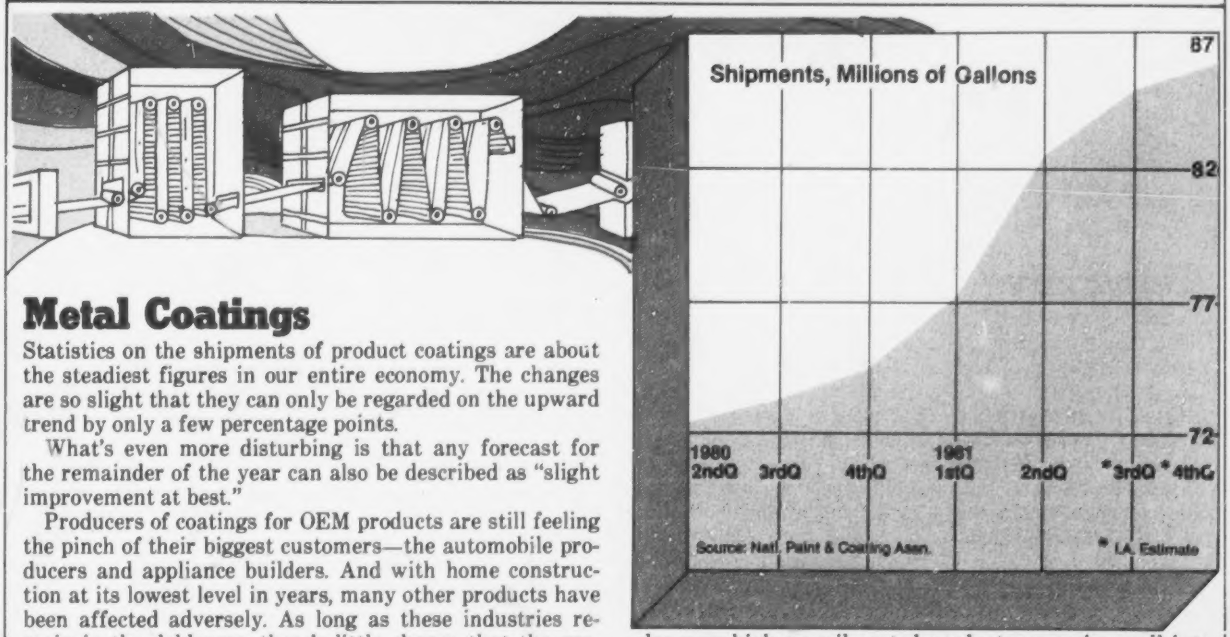
"In the last couple of years," says a union leader, "the industry has been so wrong in estimating what was going to happen that I can't believe that they believe what they're saying. I think they believe that the proper posture for them is to be optimistic, because they feel optimism sells cars. They feel they can't really afford to be pessimistic, which means they can't afford to be frank and honest.

"But I have to tell the truth to our union membership, and I don't think the future is bright as long as we have high interest rates."

"The customers now are able to buy but not willing," says one vice president of sales. "Every recession I've seen has been due to lack of consumer confidence in the market, not to actual inability to pay."

Still, the automakers remain optimistic that sales will pick up—some time.

QUARTERLY FORECAST



Source: Nat'l. Paint & Coating Assn.

* IA Estimate

Metal Coatings

Statistics on the shipments of product coatings are about the steadiest figures in our entire economy. The changes are so slight that they can only be regarded on the upward trend by only a few percentage points.

What's even more disturbing is that any forecast for the remainder of the year can also be described as "slight improvement at best."

Producers of coatings for OEM products are still feeling the pinch of their biggest customers—the automobile producers and appliance builders. And with home construction at its lowest level in years, many other products have been affected adversely. As long as these industries remain in the doldrums, there's little chance that the producers of industrial coating materials will see some sunshine.

The figures for the first half of 1981 show that product coating shipments were some 6 pct better than those for the same period of 1980. And although this may be regarded as a plus factor, it must be remembered that 1980 was not a good year for industrial paint shipments. In fact, producers rate it one of the worst years in recent history and contend that it's not an appropriate barometer for measuring the industry's health.

Have the Reagan Administration's policies affected the paint industry? Most producers contend that they've had virtually no impact on the industry. "It's far too early to say whether the policies will have any great impact. But we doubt whether they will have any effect," is the reaction of most.

Others apologize for not being economists, but they contend that the major factors affecting the major industries that consume industrial coatings are inflation and high interest rates. "If those two things can be brought under control, we'll begin to see improvement in our production and shipments," said one industry executive.

There's no question that high interest rates and a general uncertainty of our economy have had a very telling effect on the coil coating industry which is still trying to recover from a depressing 1980. The major markets for the coil coaters' prepainted products are down and not bouncing back as had been hoped—automobiles, housing, industrial and commercial construction, appliances, transportation, furniture. Even the shipments of coil coated stock to the container industry were down but not quite by the same margin as these other industries.

Some producers of industrial coatings point out that some of the slippage in shipments and usage can be attributed to the higher efficiency of some newer coating processes. Overspray is reduced sharply by the use of electrostatic application equipment. Moreover, many states and regions recommend its use to meet existing regulations as they pertain to the emission of volatile organic coatings.

Efficiency in paint transfer and coating uniformity is also very high on coil coated products—running well into the high 90 pct range. The same can be said of electrocoating.

Despite the fact that any growth in product coating shipments is relatively small, expenditures generally by the coatings industry remain at a fairly high level for new and more efficient plant equipment, and for conforming to state and federal regulations.

Paint application efficiency is also being promoted by the use of computer controls. Such sophisticated equipment is just coming on stream now in a few large companies and may be the beginning of things to come in the industry.

Although shipments of industrial product coatings showed little gain, the value of these shipments climbed to over $700 million dollars for the second quarter of 1981, up from about $595 million for the same quarter of 1980. However, raw material costs for paints also continued to climb, according to Department of Commerce figures.

Petrochemical feedstocks are not the problem that they were a few years ago, but they remain an area of concern because of the potential interruption.

As one coatings' industry spokesman explains, "As goes industry in general, so goes the coatings industry. The statistics parallel each other."

Once automobile, refrigerators, housing and the like perk up in production, the coatings industry will benefit from the upturn. But until that happens, the coatings industry can only hope that interest rates come down and the economy shows a marked improvement.

Special coatings haven't fared any better than product coatings in terms of shifts in shipments. Average monthly shipments have remained at about 93 million gals per month as opposed to about 91 million gals per month a year ago.

Special coatings are those that are formulated to withstand special environmental conditions or used in special applications, such as for plant interiors that require a specific type of protection.

During a four month period starting last November, shipments of these coatings averaged only about 70 million gals per month.

QUARTERLY FORECAST

Fluid Power

In a generally slow economy, the fluid power industry is proving to be a very tough bird. While a lot of supplier industries began to sag in second quarter, and dropped further in the summer months, fluid power has shown a striking ability to hold onto its earlier gains.

After holding through third quarter at about second quarter level, the industry now looks as if it might still be able to crowd a few more dollar volume gains in fourth quarter, defying general forecasts for the economy of further slowing in many of its markets.

At least part of the fourth quarter gain is a seasonal phenomenon. Industry observers say that in the past, fluid power has often been able to crank up a little more steam in fourth quarter when some important markets begin some early seasonal buying. But besides this, there is still some inflationary effect, reported by a number of industry members.

Despite soft markets, prices for many raw materials are continuing to creep up and will be reflected in at least some price adjustments in fourth quarter, though some of this will be carried over into early 1982 because of longer lead time items.

It's still enough to increase dollar volume for fluid power builders in fourth quarter by as much as 7 pct over a very strong third quarter showing. Some sources estimate the real gain, in adjusted dollars, will be more like 0 to 3 pct. "Fourth quarter business looks pretty flat."

There is some evidence that pneumatic equipment, particularly the replacement equipment (as opposed to Original Equipment Manufacturer markets) is holding up a little better than hydraulics, but hydraulics has the biggest part of the total fluid power market and hydraulic has proven to be remarkably firm.

Some observers say a real recovery is now well out into 1982, perhaps second quarter. But they also add that this industry has also dropped dealer-distributor inventory levels. In some cases, particularly pneumatic parts, a little of the current strength may be coming from the dealer-distributors who had already reduced their inventory anticipating a turndown that hasn't hit as hard as they thought it would.

Adding some fresh hope for the turn of the year, is a little more interest from some mobile equipment markets that have been dead quiet all year. This isn't producing any real business gains, but it begins to suggest that these customers are finally beginning to feel a little better about 1982, and are wondering if maybe they haven't pared their own inventories too deeply.

Along with forgings and castings, buyers always are concerned about the amount of fluid power producing capacity that will be available in the next market recovery. Fluid power is used so widely, by so many industries, that any delivery stretchouts in a rising economy can effect deliveries of a lot of kinds of machinery and equipment.

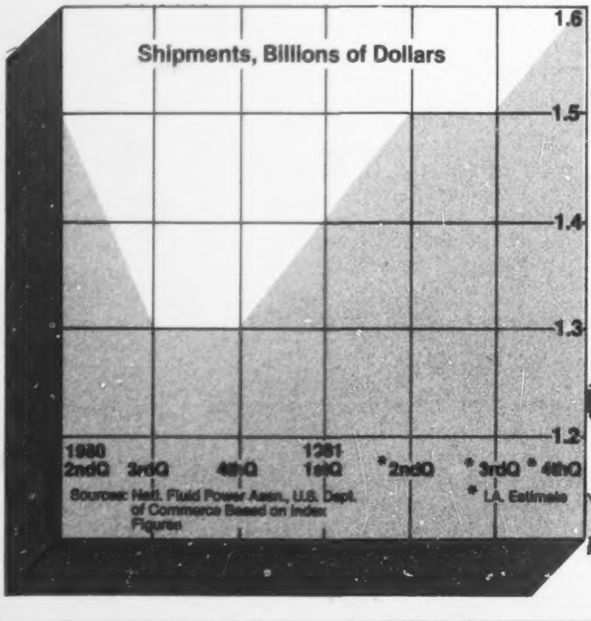
So they'll probably be getting with some approval that report at the Off-Highway meeting of the Society of Automotive Engineers that Victor Fluid Power will double its capacity for OEM hydraulic cylinders and valves.

Victor Fluid Power. an autonomous affiliate of International Harvester Co., has a complex of three plants, all in the Mideast. President Frederick Cregier told *Iron Age* that the capacity boost at two of its main manufacturing plants represented about a $6 million input for each plant. These are transfer lines by Kingsbury Machine Tool Corp., at both plants, Mr. Cregier notes, including a 70 ft. transfer line that has three machine tools on-line with pallet transfer between machines. Two more milling machines have been added off-line at one of the plants, as well. Workpieces range from 10 lb. to 35 lb. in the two plants. It says something about the health of fluid power that one of the plants is running three shifts and Saturdays, though this seems not exceptionally high even for an industry that has held up as well as in the 1980-81 recession.

The total rate for this year, even if fourth quarter holds at the third quarter level and doesn't advance, would still make this one of the strongest sales years in the history of fluid power. Veterans look back to the relatively inflation-free boom of 1978 and feel that things were better then, and in terms of real dollars expressed as net profits, they probably were.

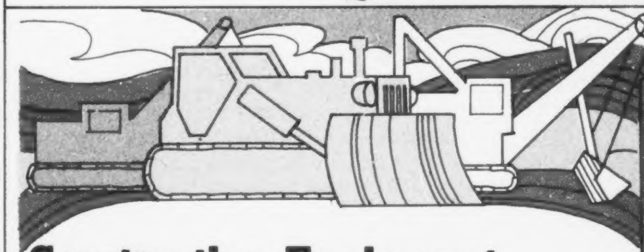
Admittedly, a lot of that gain-over-forecast came in first and second quarters. The industry came into this year with some concern over the outlook, and from 1980 that wasn't much of a gain as business years for this industry go.

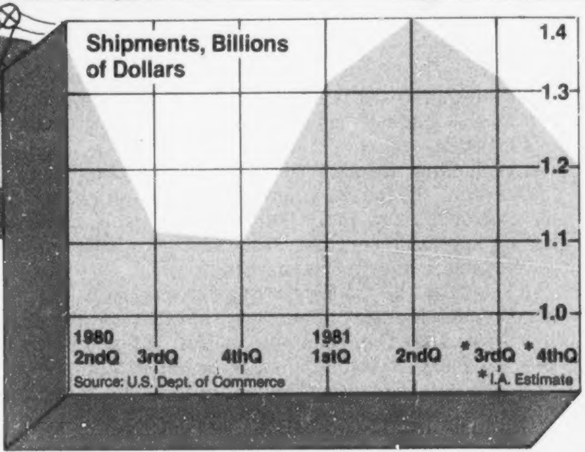
The first two quarters proved relatively strong, compared with the original expectations. The third quarter, by holding, added to the gains over the year-ago period. It would take sharper outbacks in new orders than most marketers of fluid power seem to expect, to bring down the total of the level of last year. First thoughts for 1982: Yes, it will be up, and yes, the general economy will be in a recovery phase.



Sources: Natl. Fluid Power Assn., U.S. Dept. of Commerce Based on Index Figures

QUARTERLY FORECAST





Source: U.S. Dept. of Commerce

Construction Equipment

If there is one metalworking industry that seems to be receiving a double dose of Federal Reserve-prescribed medicine, it must be the construction equipment business.

With interest rates hovering at the 20 pct market, few of the industries that sell big ticket items are having much luck these days. For the equipment builders, however, that inflationary cure-all carries an extra kick.

That added impact can be seen in the housing construction industry, the equipment builders' biggest single market. In recent months, housing starts have slipped below the benchmark 1 million units per year pace, an indication to some observers that the business has gone from what could be called a slow period into a recession.

Since contractors are building fewer homes, they obviously have little need for new backhoes or bulldozers.

Unfortunately, the weather now starts to play a key role in the construction business and the equipment builders, for the most part see little or no pickup until at least the early part of next year.

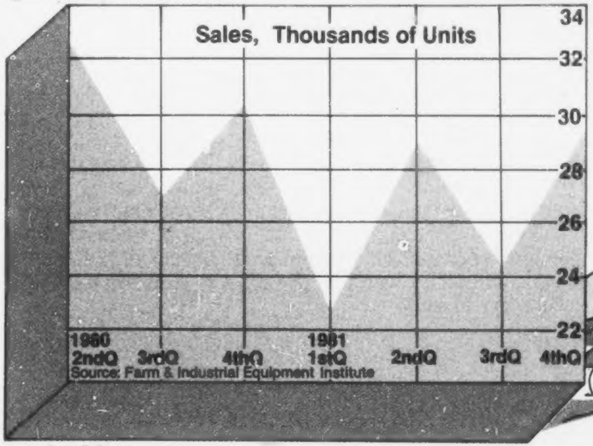
Even the big end of the market offers little relief from the current economic gloom. The commercial and industrial sectors of the construction market has shown some vitality over the past year, notes one industry observer, but the indications now are that that activity will soon start to flag.

Nonbuilding construction for such facilities as roads and sewers was slow throughout the third quarter, according to another industry spokesman. It is expected to remain at that pace in the near term and could slow even further because of the Federal budgetary squeeze on public works construction.

The sole bright spots for the equipment builders remain the oil country and the export markets. Several industry spokesmen report a steady demand for medium and big equipment, particularly in the Middle East.

Farm Equipment

Though Deere & Co., Moline, Ill., biggest U.S. producer of farm machinery was able to report a profit gain for the third fiscal quarter (ending July 31), most markets for farm equipment builders in the closing months of 1981 are not very strong. The Deere report shows third quarter gains over the year period, but points out that 1980 was not healthy.



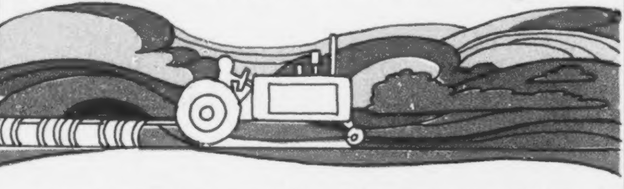
Source: Farm & Industrial Equipment Institute

Unfortunately for farm machine builders, 1981 hasn't been any improvement. Using wheeled tractors as an index, the retail sales in fourth quarter, normally one of the strong quarters of the year, are expected to fall to about 29,400 units. That is the lowest figure in the past four years. There was some recovery in July sales of tractors at retail but this recovery, believed to be strongly influenced by dealer incentives to their buyers, still wasn't able to equal the year ago period.

Since farm machinery builders are often closely allied with the construction machinery builders—and that industry continues to be very soft—the companies that share in both markets are getting hit from both sides.

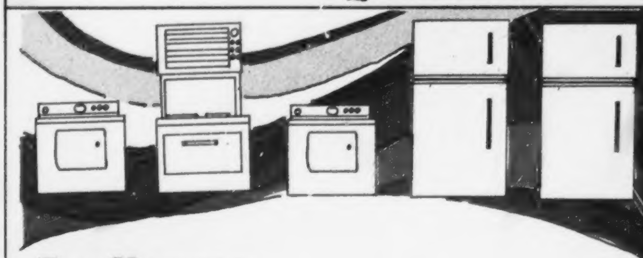
It appears that every quarter of 1981 will run below the 1980 level. A series of new product introductions, notably a massive new product introduction by International Harvester, may help sales in the fall season. But builders of equipment continue to keep to very conservative building schedules.

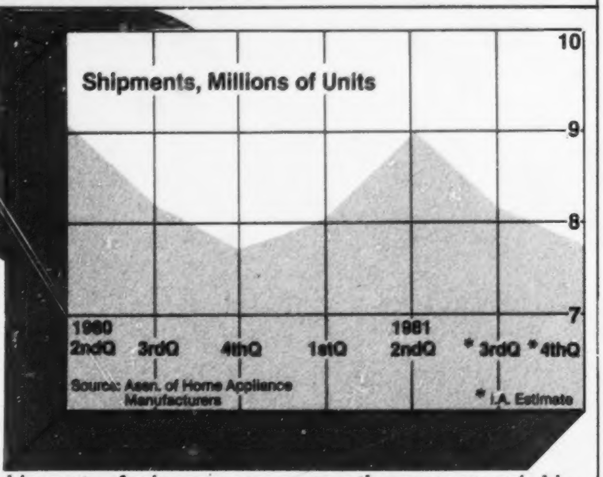
Farm equipment is very definitely a victim of high interest rates, just as the auto industry has been hit. Though dealers needn't carry the cost of inventory, which is generally financed by the equipment builder, the high cost of interest and low sales have forced a tighter inventory control on everybody. There was some pileup of finished goods in the field. This situation is still being winnowed down.



Whatever happens, the farm equipment industry doesn't look like a good prospect for any heavy manufacturing runs before 1982. This has carried over almost all of the product line.

QUARTERLY FORECAST





Source: Assn. of Home Appliance Manufacturers

*I.A. Estimate

Appliances

Appliance makers reflected the growing caution about the closing months of 1981, with a wave of layoffs during the late summer. As a result, most industry observers feel that the field inventories of appliances are too high.

This points to about a 7 pct decline in factory shipments of major appliances in the fourth quarter. Traditionally, fourth quarter is always the lowest shipment quarter of the year. At 7.6 million appliances in the fourth quarter, it is also a few percentage points under the same quarter of 1980, when the industry was in a recovery.

It went on to work upward steadily through the first half of this year. In fact, appliance performance in 1981 surpassed most forecasts for the first half of this year. Vendors supplying the industry confess that they hadn't expected the buying strength they got, particularly in the second quarter.

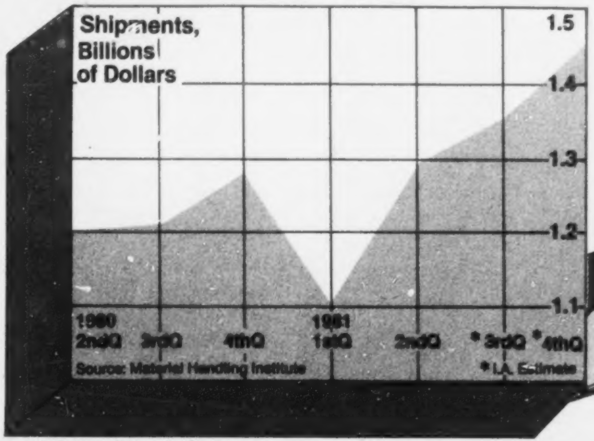
Whirlpool Corp., one of the biggest of the full-line appliance producers racked up a 25 pct net sales gain in the first half of this year, along with a 96 pct earnings gain. Litton Microwave Cooking Products, a major builder of microwave ovens, pointed to a 40 pct gain in industry shipments of microwave ovens over the year ago period in just the first five months of 1981. White Consolidated Industries Inc., which has grown to be one of the largest U.S. producers of appliances in a series of acquisitions, said that its performance in the second quarter of this year was strongly rooted in the high performance of its consumer goods divisions in all of the first half of this year.

Retail sales of appliances still tend to run a little heavier in the second half of the year than the first half. But that also means that the first half manufacturing season is stronger with shipments from the factory peaking in the second calendar quarter. For vendors, the fourth quarter will not be very lively, even though manufacturing ran over forecast during the first half.

Material Handling Equipment

Material handling equipment manufacturers expect increasing sales throughout the year. "We've had some cancellations, but by and large the bigger companies are moving ahead with productivity plans and expansions. What we make is a good part of the solution to productivity problems," says one.

The supply-siders are clearly very popular with the material handling industry.



Source: Material Handling Institute

*I.A. Estimate

Industry analysts expect the year to see steadily increasing orders, but no big surge in new bookings unless "Defense spending speeds up faster than we expect."

The Defense boom, at least for material handling has not begun.

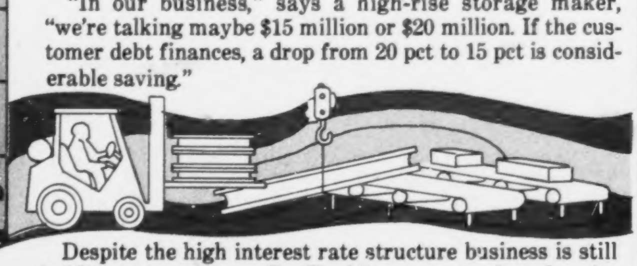
"I don't believe we'll start seeing any large new orders directly related to military equipment until near the end of this year," he says.

And, some companies in the business of moving things around in factories say they're really quite busy right now. "If Reaganomics means a big increase in our business, lead times will stretch out by weeks. No doubt about it," says one large systems company.

There have been some major projects put on the back burner in recent weeks. The bigger, more progressive companies, however, are going ahead with projects, he says.

"Cancellations and deferrals have been caused by the high cost of money and the fact that everybody believes it will come down in a few months," says one material handling executive.

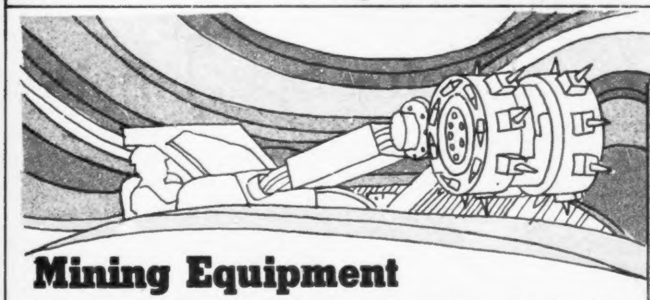
"In our business," says a high-rise storage maker, "we're talking maybe $15 million or $20 million. If the customer debt finances, a drop from 20 pct to 15 pct is considerable saving."



Despite the high interest rate structure business is still holding up pretty well. "Bookings are good and we're busy."

Optimism of a controlled kind has always characterized the industry. The products they make and sell are essential for almost any manufacturer. The Reagan program, most of them believe, can only make that fact even more clear in the market.

QUARTERLY FORECAST



Mining Equipment

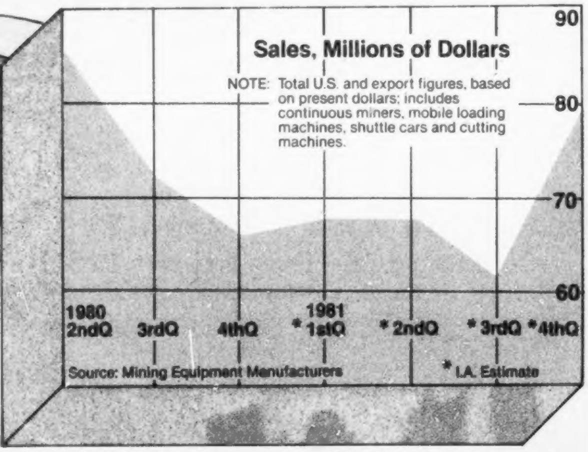
Mining equipment manufacturers head into the fourth quarter with more optimism than the last 20 years.

Coal mining equipment producers are particularly optimistic. "Although our nuclear power plant program has been stalled," says one industry source, "we've got a Secretary of the Interior (James Watt) who says the Lord wants us to mine coal. Now that to me means some pretty big business in a few months."

Industry sources also see a much more favorable regulatory climate in terms of coal burning as well as coal mining under President Reagan. "In the past the position was to use more coal—as long as it wasn't mined or burned. Now the position is use more coal," adds an industry specialist.

However, there is some uncertainty. The prime rate is holding a lot of companies back, mining equipment officials point out.

"Everybody I know is fully supportive of most of President Reagan's policies so far," says an industry source. "But, we sell a product that costs more than a house. There is hesitation in our markets. The money is there, but a lot of our customers are thinking like everybody else, that the 20 pct rate can't last."



Sales, Millions of Dollars

NOTE: Total U.S. and export figures, based on present dollars; includes continuous miners, mobile loading machines, shuttle cars and cutting machines.

Source: Mining Equipment Manufacturers

*I.A. Estimate

Clearly the problem in this industry is that the market believes the rate will come down. As a result the customer base is holding off buying.

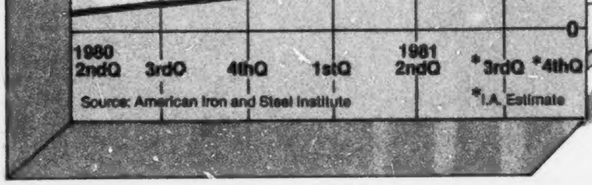
As far as President Reagan and his theories for turning around the country it would be a surprise to most in the business to hear a negative note about him or his policies from any executive in the business.

Most industry sources agree. The outlook for the rest of the year in mining equipment is good. And if there's some clarification about the cost of money, the last quarter of 1981 could be the beginning of the biggest boom mining has seen since the invention of the shovel.

Oil Country Tubular Goods

It looks as though the fourth quarter is going to be another good one for the manufacturers and distributors of oil country tubular goods (OCTG). But it's not going to be as strong as the three previous quarters were.

The reason: most of the major oil companies have scaled back on their purchases of items somewhat. Industry observers point out, however, that the belt-tightening move occurs each year at this time as oil firms close out their annual budgets and await new ones. They expect the oil industry's level of buying to return to normal in the first quarter.



Shipments, Millions of Net Tons

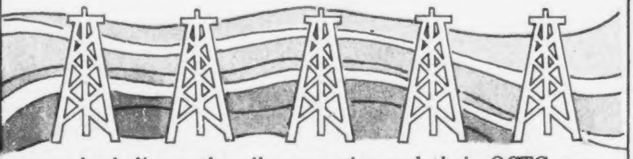
Source: American Iron and Steel Institute

*I.A. Estimate

There is one area—electric resistance welded casing and tubing—that is causing much concern in the industry. While the overall market still remains "fundamentally sound," industry observers say there is an oversupply in small diameter sizes and carbon grades. The sizes of ERW casing and tubing that are most abundant are those ranging from 4½ in. OD to 5½ in. OD. "There's just a hell of a lot of it on the ground," said one Houston-based distributor of oil country goods.

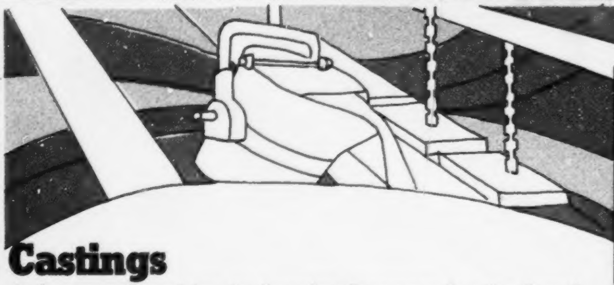
The surplus has been caused by rising imports from Japan and Third World countries, and the growing number of domestic producers that have entered the electric resistance welded tubing and casing market.

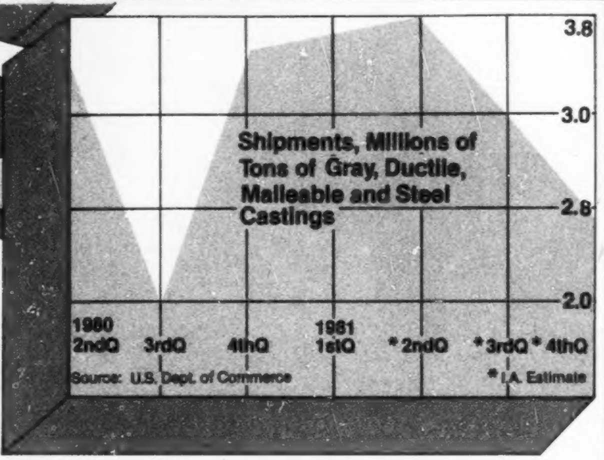
Several major oil companies report they are adjusting their inventories to deal with the oversupply of ERW tubing and casing. Though this may be somewhat troubling to the OCTG industry, one major seamless pipe producer sees it as a "good sign." By adjusting their inventories now, he believes the oil companies and their OCTG suppliers will be able to avoid serious consequences in the future.



How long will the oversupply situation last? A purchasing manager for a major oil firm believes it will be worked out before the fourth quarter is over. In contrast, the president of a Houston-based OCTG distributing company expects the oversupply to carry over into the first quarter of 1982, and maybe further.

QUARTERLY FORECAST




Shipments, Millions of Tons of Gray, Ductile, Malleable and Steel Castings
3.8
3.0
2.8
2.0
1980 2ndQ
3rdQ
4thQ
1981 1stQ
*2ndQ
*3rdQ
*4thQ

Source: U.S. Dept. of Commerce

*I.A. Estimate

Castings

A downward revision in foundry forecasts for the fourth quarter could pull shipments under third quarter. Earlier forecasts expected a recovery in fourth, this year. But revisions in the farm equipment outlook, hesitation in the construction machinery and truck markets because of high interest rates have softened the forecast.

There are considerable differences, however, in foundry business levels. Auto foundries continue to slow. Some jobbing foundries had a tough summer.

The big concern among casting users is that a 1982 recovery could hit suddenly, as it did in 1973 and 1978. Then casting deliveries lengthen and lead times spurt. Foundry closings in 1980 and 1981 have accented that fear.

But 1981 also saw the beginning of one of the biggest expansions to date by a jobbing foundry. Grede Foundries, Inc., Milwaukee, will invest a stunning $34.1 million to expand its chain of ferrous foundries. Grede is already one of the five largest independent foundries in the U.S., rated at just under 10,000 tons of castings per month. Burleigh Jacobs, chairman of Grede, says the new investment will take Grede up to nearly 14,000 tons per month.

The plan calls for an $8.7 million outlay at its Reedsburg, Wis., plant, which could then make 53,500 tons of medium sized ductile iron castings per year.

A ductile iron foundry at Wichita, Kans., will get $3 million to boost its output to 13,200 tons of castings per year, up from 9,250 tons.

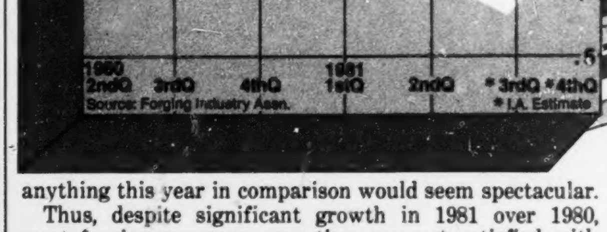
And $3 million will go into an already automated plant at Kingsford, Mich. A Spring City, Wis., gray iron foundry will double to 15,500 tons per year, and a steel foundry at Milwaukee, Wis., will get $4.3 million.

In a tough foundry year, it's heartening to both users of castings, and other producers, that the foundry industry still sees a growing market.

Forgings

In comparison to last summer, the forging industry this year has done very well. July figures, for example, represent a jump in new orders of 86 pct from July of last year.

"The figures, however, are misleading," says one industry spokesman." Last summer the bottom dropped out of the industry. For example, July of last year was so bad, anything this year in comparison would seem spectacular.



Source: Forging Industry Assn.

*I.A. Estimate

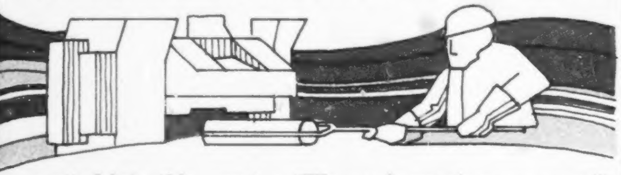
Thus, despite significant growth in 1981 over 1980, most forging company executives are not satisfied with present industry levels. And entering the fourth quarter, little evidence exists to indicate business will pick up significantly in the next three months.

At present most of the major forging markets are off. Sales to automotive companies remain very poor; sales to farm and construction equipment manufacturers are slumping—the exception being equipment destined for drilling, mining and pipeline work. Even orders from the aerospace industry have slowed. On the plus side, orders for defense products are increasing steadily and should continue to grow.

Few forging officials see much evidence that the industry will improve much in the fourth quarter. "Business will pick up only if interest rates drop dramatically and soon," explains one official. "And even if the rates dropped, it would take several months for any turnaround to take place."

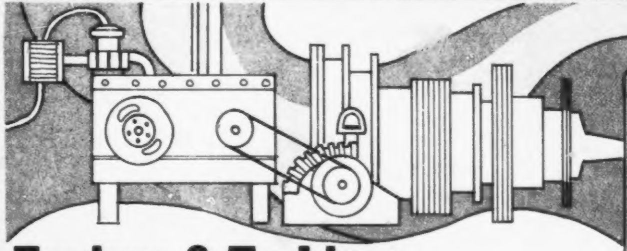
"High interest rates are holding everything up," said another manufacturer.

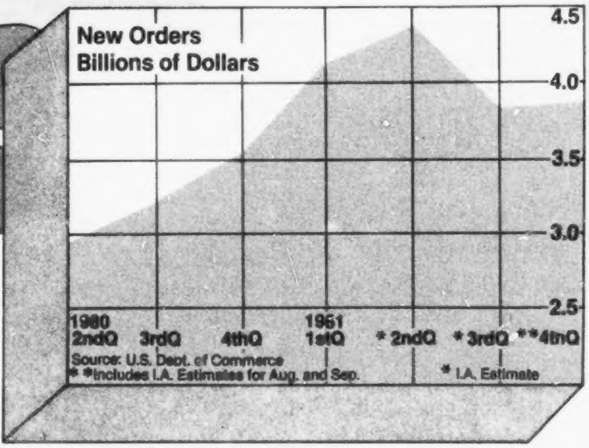
Besides the high interest rates, manufacturers are growing increasingly concerned about forgings being imported into this country. "We are increasing our surveillance of imports at this time," commented one industry official.



Despite the fact that a number of forging companies have had flat sales through most of 1981, nearly everyone is optimistic that the new business climate ushered in by the current administration will significantly improve business in 1982, "as soon as interest rates are brought under control."

QUARTERLY FORECAST





Source: U.S. Dept. of Commerce
**Includes I.A. Estimates for Aug. and Sep.
* I.A. Estimate

Engines & Turbines

The broad Department of Commerce category encompassing the smallest gasoline engines through big diesel units and up to massive power generating sets experienced a rapid softening across all spectrums in the third quarter. And the fourth quarter isn't too encouraging.

Industry executives generally hail the Reagan Administration's economic program but feel it will be a while before it works its way into their order books.

"There's a lot of fear psychology out there," said one, "a lot of gloom and doom. I think the rest of the year will be well below last year, particularly in sales, not so much in production," he said of his primarily diesel engine product mix.

At the larger end of the engine spectrum, interest rates are on the minds of many. But low inventory levels and low order levels throughout 1981 lead many to be optimistic about 1981.

"They can't go on existing on just replacement for much longer," predicts one corporate economist. "Pretty soon they'll start buying again."

But he added the automotive market will be stop and go throughout 1982.

The small engine market will progress in the fourth quarter, executives predict, but they note their business cycle always peaks in mid-winter so an increase now is natural. The summer slowdown, they note, was far below last year's and the year as a whole will not go on the books as a banner one.

"It was just a bad year, that's all," said one manager.

Large turbine generator sets, the top of the spectrum, have been plagued by more than a seasonal decline. Power consumption has not grown as rapidly as was hoped and a general overcapacity exists.

Says one economist, "I think we're looking at a five-year period of depressed orders, perhaps even 10."

Aircraft

In appraising his company's performance in the first half of 1981, T. A. Wilson, Boeing Co. board chairman, noted that "current economic conditions, substantially increased competition, and high fuel prices continue to adversely affect traffic growth and profitability."

Commercial Plane Orders

1980	Boeing	McDonnell Douglas	Lockheed	Airbus
2nd	119	16	1	10
3rd Q	26	4	8	10
4th Q	93	2	3	26
1981				
1st Q	93	14	1	26
2nd Q	39	10	1	34
July	10	5	—	—
August	−3	1	2	—

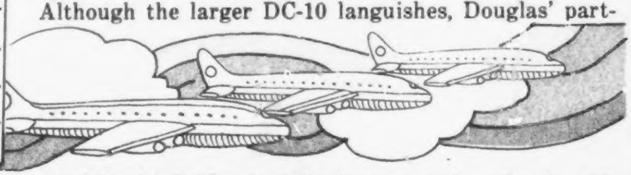
Source: Iron Age

Boeing, as the largest of the commercial aircraft builders, has felt the full force of its customers' woes.

Until it can get its new, fuel efficient 757 and 767 planes on the delivery line in 1983, Boeing is in for a period of belt-tightening. Boeing's bread-and butter, the three-engine 727, recently has been passed by in favor of two-engine planes which carry a lower price tag, can be operated by a two-man crew, and use less fuel. The Boeing 747, the world's largest commercial aircraft, has failed to generate the passenger loads to operate efficiently in many cases, and new orders have dried up.

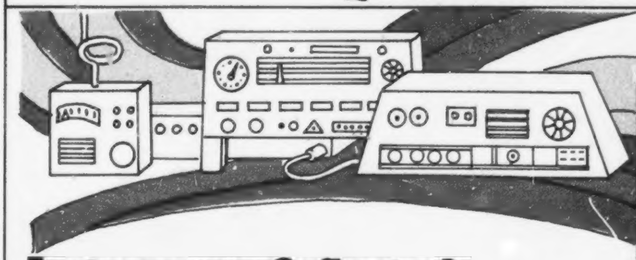
Boeing's problems are only relative. The company will continue to operate profitably. Lockheed, which only has the wide-body L-1011 to offer the airlines, has sold only four of these planes during 1981, offering little hope for future profits on this plane. A rumored order for three 1011's from Air India presumably would keep the plane in production. But the possibility of abandoning the commercial aircraft business is not lost on the stock market. Lockheed stock rises each time the 1011 is rumored to be on the way out.

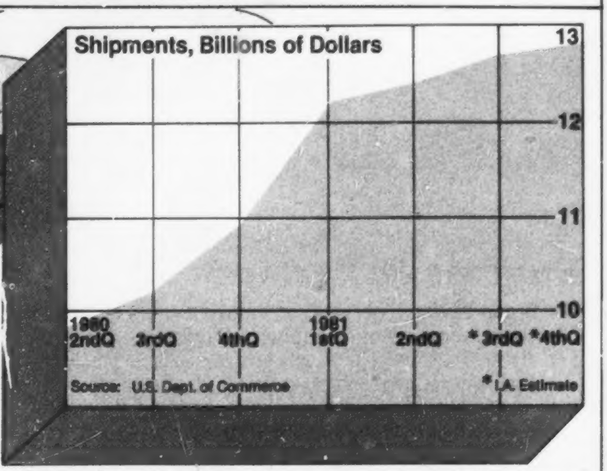
McDonnell Douglas is doing somewhat better in selling its long, narrow DC-9 Super 80, whose quiet twin-engined operation and early delivery have found a market niche. Although the larger DC-10 languishes, Douglas' partnership with Fokker in designing a new plane for the 150-seat market provides reassurance that the company will continue to market commercial aircraft.



Industry veterans are quick to point out that commercial aircraft orders historically have been cyclical, recalling the early 70's in particular. One element is different today: The U.S. builders must share the market with Airbus Industrie, the European consortium. While Airbus shares the current order drought, it provides evidence that it will be an effective competitor.

QUARTERLY FORECAST





Instruments & Controls

The instrumentation industries will probably finish the year with gains in revenues of about 11 pct. This is slightly lower than we predicted, still not a bad performance overall.

The principal factors in this area have been first of all, plant and equipment expenditures and, secondly, exports. If you look at plant and equipment expenditures over the years, instrumentation sales will generally run about 3 to 3½ pct above the percentage change of plant and equipment expenditures. This year, plant and equipment expenditures have increased about 8 or 9 pct over 1980.

Export exchange rates are also a factor. Instrumentation as a whole exports about 27 pct of its product, a lot higher for some of its more advanced products. The Federal Reserve Board index of exchange rates has gone from the low 90s to about 109 for seven months of this year. This increase has not shown up in the data yet for exports. It should in the next year; the magnitude is not yet clear. But exports which have been increasing at 22-25 pct a year will not show that much growth with this exchange rate.

One major advantage of instrumentation products, even in this economy, is a fast payback. A company can spend $2 million, get a lot more efficiency and pay back the entire investment in two or three years.

This is keeping the figures up and the industry relatively healthy. Activity in retrofitting older facilities is significant; new construction will have to wait.

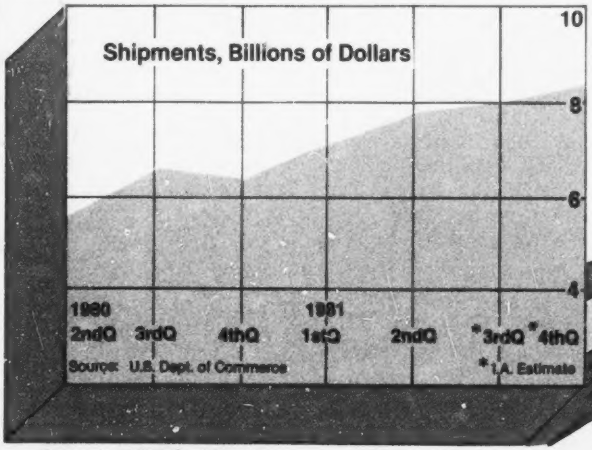
Energy management systems are very strong, up 20 pct or more. Data communications equipment is also very healthy.

The increases in military spending, proposed by the Reagan Administration, will help the instrumentation industries; tax credits for R&D will also have a positive effect.

Computers

Growth is not meeting anticipated levels.

That sums up a very mixed and uncertain situation in the computer industries. Almost every computer company is reporting increased revenues and increased profits. The average increase in revenue for the top eight computer firms in 1981 is 13 pct.



So, 1981 will not be a bad year, but it will not be as good as was hoped. The computer industry has been growing at a phenomenal rate. In 1981, this growth was restrained: the domestic market, primarily because of the high interest rates; the overseas market, because of the value of the dollar abroad.

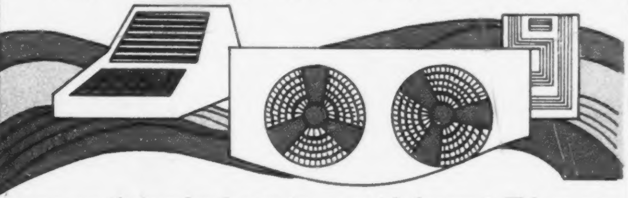
Domestically, potential computer users have adopted a 'wait-and-see' attitude about the economy.

This is particularly true in the mainframe computer business, where investments can run from several hundred thousand dollars to over a million dollars.

There is still substantial growth in the lower end of the marketplace, however. Demand is strong for small computers, personal computers, minicomputers. Some manufacturers of this equipment actually thank the high interest situation for restraining demand enough to allow them to build production.

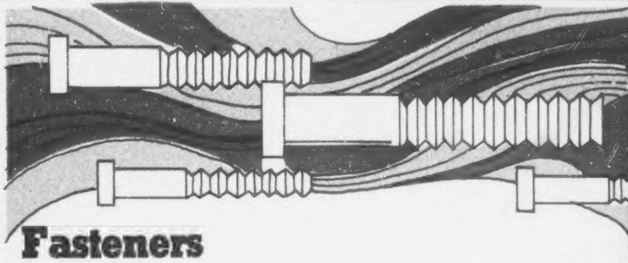
Without some restraint, they feel, the market might have exploded beyond their capacity to handle it, and then gone overseas.

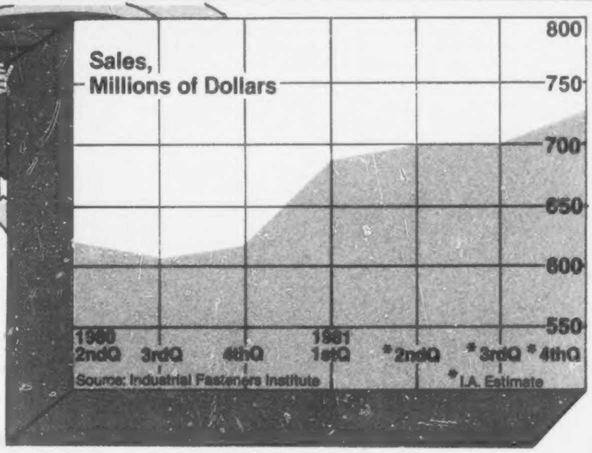
Many computer companies still contend that their products are productivity tools and that sales based on this rationale will help them weather the economic storm. Others say their sales forecasts are not being met. This quarter in particular, the weight seems to be in favor of the latter opinion.



Next year, the European economy is expected to rebound. This will help the computer industry, particularly the multinational companies with foreign production facilities to insulate them from the dollar's ups and downs.

QUARTERLY FORECAST





Source: Industrial Fasteners Institute

*I.A. Estimate

Fasteners

Fastener makers have been reporting steadily increasing business, but not great business throughout the year.

Still, the industry is improving and the rest of the year looks to be a continuation of steady market return.

Fastener makers believe that they will enjoy good business levels based on indications of a heavy defense buildup under the current administration.

Other fastener makers note that the kinds of programs that have been and are being severely cut aren't held together by mechanical fasteners. "There aren't many nuts and bolts in social programs," says one. "From where I sit," he adds, "it looks like a pretty good year for us." Like others in the industry, he strongly supports the Administration's approach to inflation.

The Federal Reserve and its tight money policy is seen as the culprit by fastener makers.

"I suspect that the rate will drop a lot in a few months," says one fastener maker. But it's that uncertainty that has fastener companies with more questions than plans.

Meanwhile, the industry is reporting good business from some sectors of the economy and decreased business from others.

When questioned about the fastener industry's link to Detroit many makers say they are not dependent upon Detroit anymore. Many of the producers believe car sales will improve soon, and when they do many producers of mechanical fasteners will benefit.

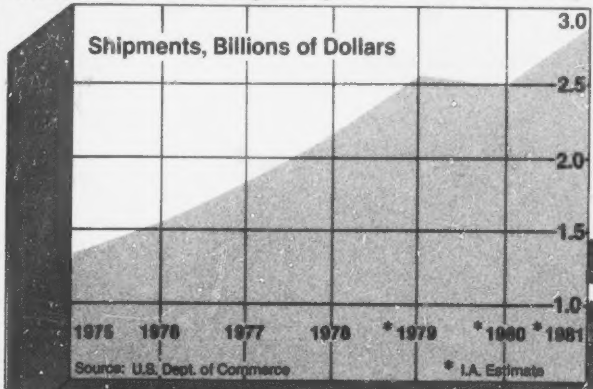
One area maintaining a terrific volume of orders is aerospace. "There's a lot of business for us in planes and we're getting it. That's often also very high profit business," one fastener producer notes.

Some other markets, such as industrial equipment, are stalled. "Again," according to one fastener producer, "they're waiting for the answer on the rate."

The remainder of the year is a mystery. "We see a last quarter at least as good as the first three."

Screw Machine Products

The tale of the screw machine products industry has been one of fits and starts throughout 1981 and officials predict that the rest of the year will see more of the same. Throughout the year there has been little consistency, with one month showing strength and the next one dropping off. July was surprisingly strong as new orders increased.



Source: U.S. Dept. of Commerce

*I.A. Estimate

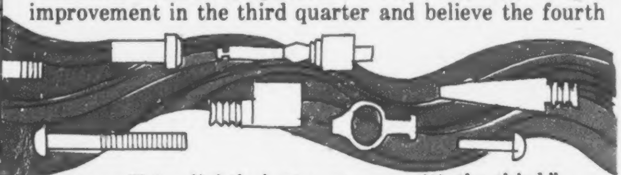
"At present, we feel that any growth spurts are temporary," commented one industry official. "We can only hope that they are a sign of some strength, but until we get some consistency, until we get that order base developed, we can't be too optimistic about the rest of 1981."

Predictions are that significant sales increases will not occur until the second quarter of 1982. The chief reason for lack of industry growth, officials say, is continuing high interest rates.

"The high interest rates are slowing down product purchases in two ways," says an official. "In many instances people just can't afford to borrow at today's interest rates, and even when people can afford to borrow, they are not doing so because of the psychological effect this period of sustained high interest rates is having on potential borrowers."

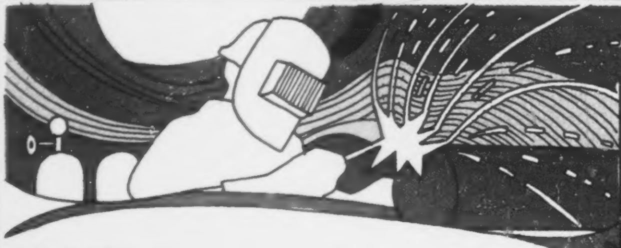
One positive aspect about screw machine product business in 1981 is that in opposition to 1980, business throughout the year has been improving.

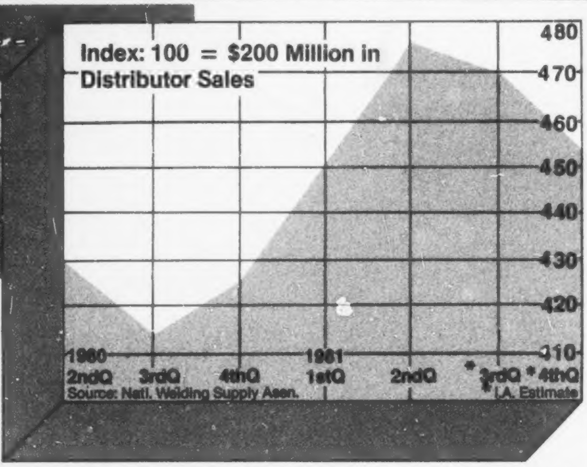
"When taking into account seasonal variations, the first and second quarter of this year have shown little growth," remarked an industry spokesman. "However, we see slight improvement in the third quarter and believe the fourth quarter will be slightly better or even with the third."



While the majority of manufacturers are having a flat year, the screw machine product industry is so fragmented that generalities about the industry often do not reflect the individual company. In the same block in the same town, for example, one manufacturer could be doing well while another may be doing poorly. To overcome this fragmentation of the industry, a number of screw machine product manufacturers are trying to diversify their product mix.

QUARTERLY FORECAST





Welding

By all reports, the welding industry had the strongest quarter in its history during the second quarter of this year. Although they are still adding up the figures, the third quarter appears to be almost as strong as the preceding record-breaking period.

Industry pundits see the fourth quarter weakening, but the order backlogs reported by some manufacturers could carry the industry through 1981 with flying colors.

The President's economic plan is certainly bound to have considerable impact in various markets where welding is used extensively. Energy-related construction and a possible revival in Naval shipbuilding are two markets in particular. Any sudden pickup in construction and/or farm equipment will also be good news to the welding industry. However, here in particular, soaring interest rates will play a role.

One of the best barometers of the condition of the welding industry is the Welding Supply Index of the National Welding Supply Association, Philadelphia. This NWSA index has been published monthly since 1977.

According to the NWSA figures, the second quarter of 1981 was 6 pct ahead of the first quarter, a record three-month period by itself, and 11 pct ahead of the second quarter of 1980.

Also according to the NWSA, welding equipment was particularly strong during the months of June and July. The individual high month so far this year was April.

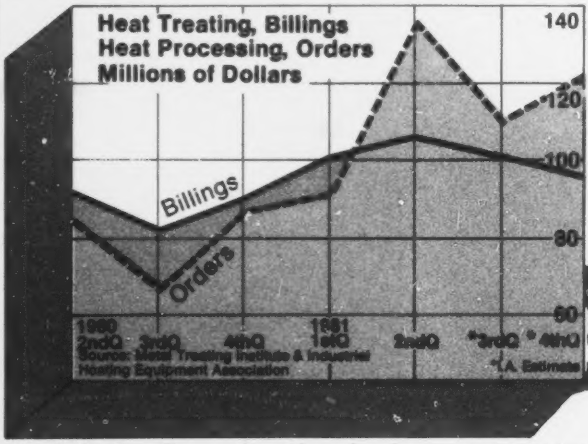
One of the reasons that the domestic welding industry seems to be in such good condition is the fact that most foreign manufacturers find it impossible to penetrate the American market.

If you include the dollars spent for demurrage on gas cylinders, the welding industry should pass the 1980 sales of $3½ billion. There's even an outside chance that the $4 billion barrier might be broken.

Heat Treatment

Domestic orders for heat processing equipment came in during the second quarter of 1981 at a pace every bit as hot as the environments such equipment produces.

The jump from the first quarter approached 50 pct—a jump large enough to come as a surprise to most people in the industry. Domestic orders in the second quarter amounted to a hefty $136.1 million—about 60 pct over the same quarter of 1980.



That quarter, plus the estimated domestic orders for the third quarter and projections for the fourth quarter virtually assure the producers of heat processing equipment a successful year.

Have Reagan Administration economic policies had any effect on the industrial heat processing field? Not really. Most people in the industry agree that any effects of Administration policies would be too early to assess. Also, most agree that such policies will have minimal effect.

The commercial heat treaters, likewise, have posted gains over last year. Billings for the first six months of 1981 were $207.5 million—an increase over 1981 of $6.6 million. Billings for the second quarter of 1982 were 13.6 pct higher than the year before.

Although some leveling off in billings is expected for the remainder of the year, 1981 should finish with a comfortable margin over 1980. All geographical areas of the country shared in the recent increases—including the Michigan area. However, this area is still sluggish but "improving very gently," as one spokesperson put it. On the other hand, areas involved with oil country goods and aircraft are holding up strongly.

What's ahead for the commercial heat treaters? Simply this. The original forecasts for the industry can now be thrown aside. The latest thinking is that billings for the year will be up by 12 to 14 pct as opposed to the original projections of 5 to 9 pct.

As for the Reagan Administration's policies, the heat treaters' eyes and ears are focused on defense spending. If the cuts are sharp, there's no question that some geographical areas will be affected adversely.

QUARTERLY FORECAST

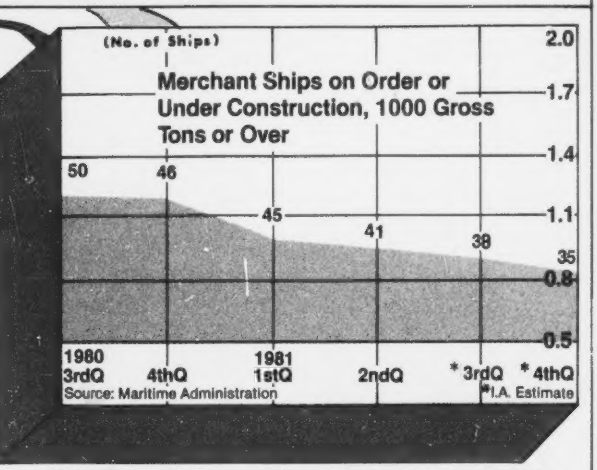
Shipbuilding

The U.S. shipbuilding industry has not added anything to its order book for the end of the third quarter except more uncertainty to its outlook. While shipbuilding is generally soft, it is depending for much of its future on the Reagan Administration's policy for Defense.

An official at the Shipbuilders Council of America notes that everyone in shipbuilding associated with the defense industry is awaiting the Administration's decision with respect to any further cuts in the defense budget. In the case of the Council it is particularly concerned about the goal of a 600-ship Navy and whether the Administration will stretch out the timetable to build the ships needed.

As of mid-1981 a total of 101 Navy and Coast Guard vessels were on order with an estimated contract value of $9 billion.

As of mid-'81 a record 84 offshore drilling rigs were under construction or on order to American shipyards. This is the one area where contracts have remained steady if not strong. According to estimates from the Maritime Administration, nearly 50 pct of all offshore rigs are being built in the United States. In a like manner the demand for offshore petroleum service vessels (product hauling tankers) is also accelerated.



In addition to the almost boom-like conditions in offshore drilling rigs, the demand for medium-sized product tankers has shown a modest revival. As of June 30, 1981, 19 conventional product tankers were on order, plus seven integrated tug barge tankers.

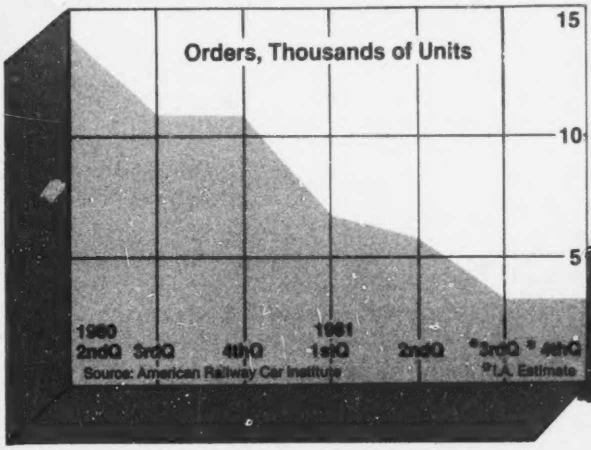
Production of inland barges and towboats is strong and repair work is steady. According to both the Shipbuilders Council and the Maritime Administration the number of conversion contracts has been firm. But, whereas that part of the industry is holding steady, during 1980 only four, deep-draft merchant ships were ordered in the entire U.S.—the lowest number of orders in any year since 1953.

Rail Cars

Rail car builders in the third quarter continued on their dismal track with orders plunging still further.

"There just isn't any demand out there," remarked more than one official. This year is being called a very dismal one—the worst in many years.

Going into August rail car yards throughout the United States were reporting less than 25,000 cars in their shops.



What really hurts though is that once those cars are completed and out the door, there is nothing to back them up.

In fact, things have gotten so bad that new orders have dwindled down to less than 1,000 in August. This coupled with the orders of about 1,100 in July brings total new orders in the pipeline to something over 2,000. In September officials are looking for another 1,000 which would bring the total to 3,000 for the quarter.

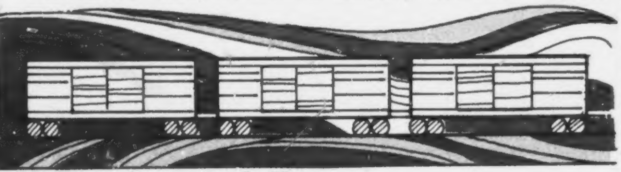
For the fourth quarter, there doesn't seem to be any hope in sight that orders will pick up.

Iron Age is forecasting 1600 new orders in the last quarter, half from what they are finishing up the third quarter.

Estimates for the year run at between 20,000 and 25,000 orders but now with the impending doom of the final days of 1981, these estimates could be set even lower. This is a very far cry from the total of 130,000 cars which were turned out in 1978.

This does not bode well for the industry as it enters 1982.

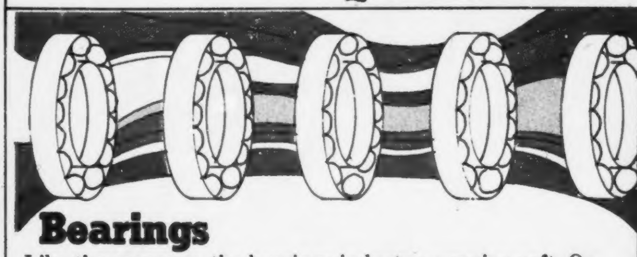
Where some metalworking industries are looking for a comeback in 1982, the rail car industry seems to be stuck on a recessionary treadmill.



As for hope that the Reagan Administration's policies will make a difference in the late stages of 1981 and on into the New Year, most officials shrug and say, "Right now it's too early to tell what will happen."

While most industries are complaining about the high interest rates, the rail car industry is putting the blame for most of the falloff on the recession of the last two years.

QUARTERLY FORECAST



Bearings

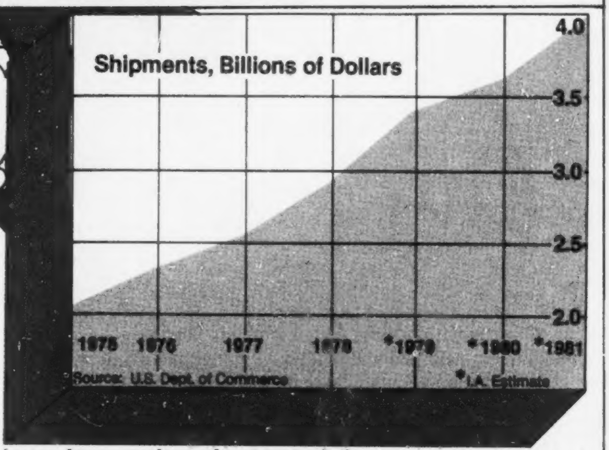
Like the economy, the bearings industry remains soft. Orders throughout the summer have remained flat and there is little prospect of recovery through the fourth quarter.

"Our billings have held up well to date however, our bookings are off appreciably," explained one bearing manufacturer. "I don't see any pickup in the fourth quarter of this year—especially on the OEM side."

When OEM sales are off, bearing manufacturers traditionally have seen a pickup in aftermarket sales. But even in this area, bearing manufacturers have been reporting a flat market.

The slump in bearing sales, however, is not universal and selected manufacturers continue to do well, however, bearing makers tied heavily to slumping industries will continue to experience flat sales through the remainder of this year. Several manufacturers don't expect much growth until the second quarter of 1982.

As has been the case for most of this year, sales to auto manufacturers, farm equipment builders and construction equipment producers have been depressed. Sales to the machine tool industry have slowed down and even the aerospace industry is ordering fewer bearings than in the past. A few industries, however, are increasing their bearing orders—such as the energy industry, companies manufacturing for the military, and robot manufacturers.


Shipments, Billions of Dollars

Source: U.S. Dept. of Commerce

*I.A. Estimate

"Really, it is the high interest rates that are killing everybody," explained one manufacturer, "because interest rates are high the farmer cannot afford a tractor, the machine tool buyer cannot afford his operations, and the average citizen cannot afford an automobile."

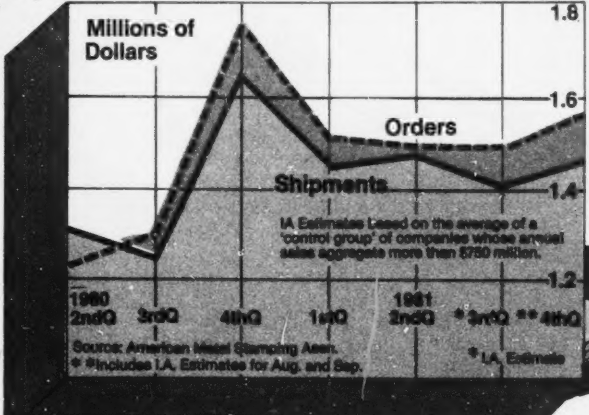
"Until interest rates come down," said another manufacturer, "this industry is not going to pick up."

Despite the high interest rates and the generally stale business climate, however, bearing manufacturers, for the most part, wholeheartedly support President Reagan's economic policies and philosophies. They believe that while business may be flat in the short run, the long run appears to be rosy.

Stampings

The $27 billion stamping industry has found little to cheer about so far in 1981. And the rest of the year doesn't look too good either.

It's no mystery why stamping orders have been in the dumps. Just talk to a stamping executive who supplies any one of a number of markets—like automotive, appliance, housing-related—and the picture is clear. As go those industries, so goes stamping.



IA Estimates based on the average of a 'control group' of companies whose annual sales aggregate more than $750 million.

Source: American Metal Stamping Assn.

**Includes I.A. Estimates for Aug. and Sep.

*I.A. Estimate

And most executives agree, the forces that kept those segments of the economy in the dumps for the first three quarters of 1981 aren't going to change much in the last quarter.

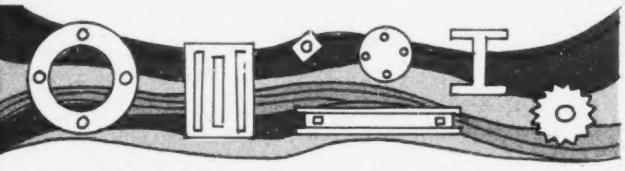
"If I had to sum up the three biggest problems," quips one firm's manager, "they would be interest rates, interest rates and interest rates."

Industry executives say they are faced with dilemma over the President's economic recovery package and its apparent nemesis, interest rates. They agree the package is good for business, but point out in the same breath that high interest rates seem to be counteracting the very spending the bill was to encourage.

"I was hoping the fourth quarter would pick up," says one Midwest executive, "but I don't see it. I can't see anything spearheading a recovery. And I think Mr. Reagan will be rigid on those interest rates," he concludes, leaving little hope for a fast turnaround.

The segments of stamping that seem to be unhurt remain aerospace and computer suppliers.

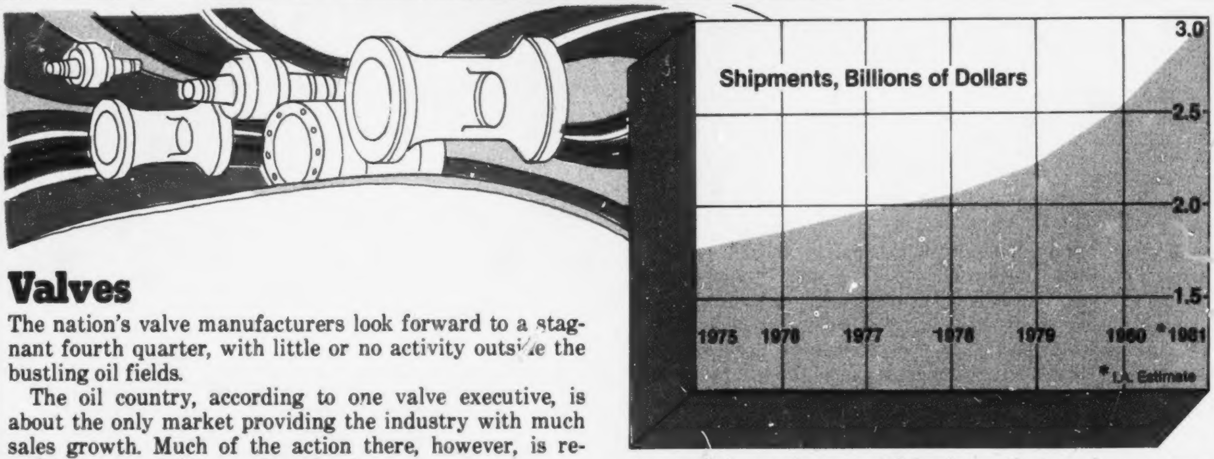
"It's been good so far," says one executive of a West Coast firm involved in business equipment, "and knock wood it'll stay that way."



In general, some pickup is expected in the fourth quarter for the industry as a whole, but it is primarily seasonal. Stampers believe the fourth quarter will be, at best, a mediocre ending to a less than mediocre year.

Moreover, looking into 1982, they don't believe things are going to get better quickly. Any recovery, the concensus seems to be, will be a gradual one.

QUARTERLY FORECAST



Valves

The nation's valve manufacturers look forward to a stagnant fourth quarter, with little or no activity outside the bustling oil fields.

The oil country, according to one valve executive, is about the only market providing the industry with much sales growth. Much of the action there, however, is restricted to the drilling and production sectors.

Synfuels, another energy-related market that the valve manufacturers once thought would provide a gusher of new business also looks like a dry hole. The reason: President Reagan showed little enthusiasm for that program during last year Presidential campaign and, since his election, has done little beyond what was required by the legislative mandate.

In addition, Mr. Reagan's anti-regulatory stance has prompted some concern among industry members who depend on the Federal government's wastewater regulations. "That's really a two-edged sword," says one industry official. "On the one hand, we get some relief from the onerous rules. But, on the other hand, we could start losing some of the environmental business that we have grown accustomed to."

The current high level of interest rates is also posing problems for the industry in terms of its distribution pipeline. Its distributors are unwilling to carry sizable inventories.

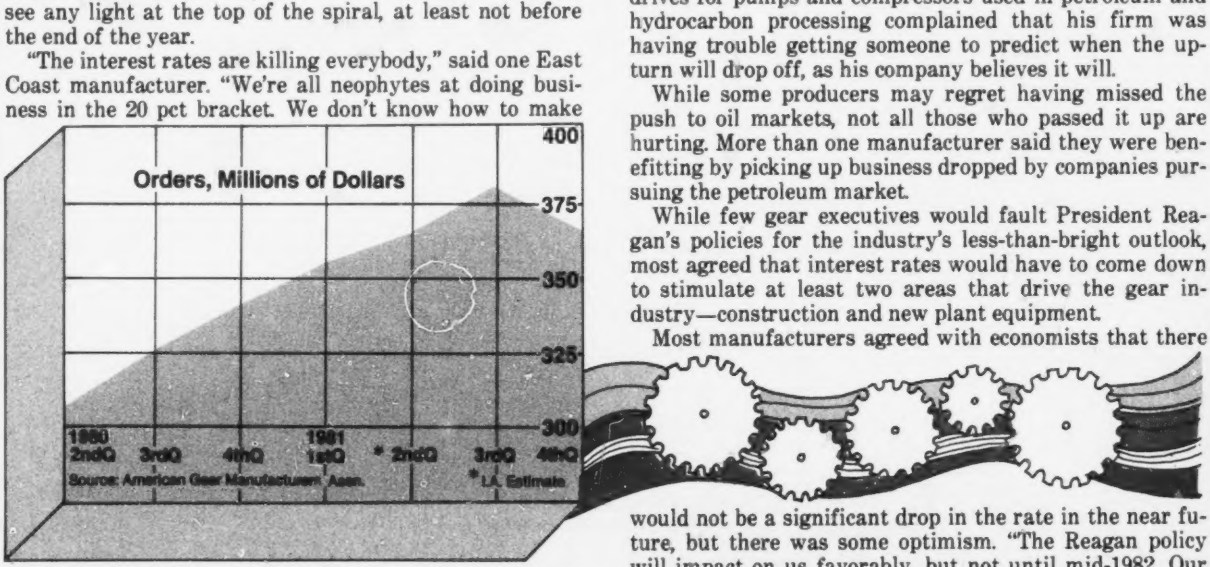
"The distributors are in serious trouble because of the high interest rates," says one industry executive. "Even though the end user market may not be that bad. They (the distributors) are being pressured by the high cost of money."

Meanwhile, the industry still faces a stiff battle for its domestic market. Foreign producers now claim upwards of one-third of the market for basic commodity items.

Gears

The gear industry sees high interest rates as the major concern for the fourth quarter. And few manufacturers see any light at the top of the spiral, at least not before the end of the year.

"The interest rates are killing everybody," said one East Coast manufacturer. "We're all neophytes at doing business in the 20 pct bracket. We don't know how to make plans for expansion or how to offset interest rates against inflation."



Source: American Gear Manufacturers Assn.

Fourth quarter outlooks vary heavily with the industry's diverse markets. Military and aerospace are two of the boomers. The energy markets are generally active, with petroleum on the upswing. Though most in the gear industry are predicting it will level off, the question is when?

One West Coast producer of enclosed high-speed gear drives for pumps and compressors used in petroleum and hydrocarbon processing complained that his firm was having trouble getting someone to predict when the upturn will drop off, as his company believes it will.

While some producers may regret having missed the push to oil markets, not all those who passed it up are hurting. More than one manufacturer said they were benefitting by picking up business dropped by companies pursuing the petroleum market.

While few gear executives would fault President Reagan's policies for the industry's less-than-bright outlook, most agreed that interest rates would have to come down to stimulate at least two areas that drive the gear industry—construction and new plant equipment.

Most manufacturers agreed with economists that there would not be a significant drop in the rate in the near future, but there was some optimism. "The Reagan policy will impact on us favorably, but not until mid-1982. Our main concern is high interest rates and we're positive they will drop sharply by mid-year," said one producer.

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HOW COOLING IT MAKES ELECTRIC FURNACES PRODUCE MORE

With water cooling, there is almost no limit to the size, speed and power of a modern electric furnace.

By George J. McManus

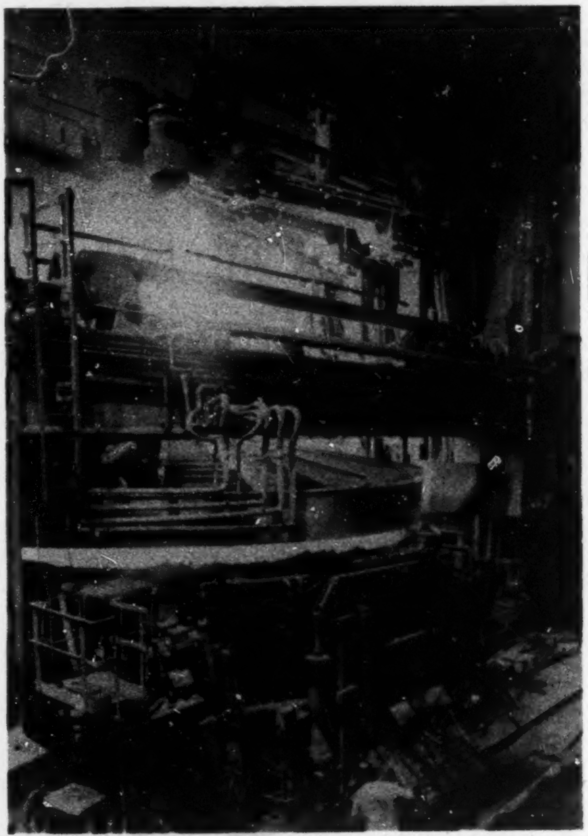
"With water-cooled panels and roofs, the sky's the limit," says J. R. Bello, manager of electrical engineering for Lectromelt Corp.

Mr. Bello is referring to electric arc furnaces. With water cooling, he indicates, there is almost no limit to the size, speed and power of a modern electric furnace.

Among those reaching for the sky with large, high-powered furnaces are Bethlehem Steel Corp. at Johnstown, Pa.; Crucible Steel at Midland, Pa.; and Jones & Laughlin Steel Corp. at Pittsburgh.

Both the Crucible and the Bethlehem electric furnace shops are designed for yearly production of 1 million tons or more. Both are in the early startup stages.

The Jones & Laughlin Pittsburgh shop, which began operating in 1979, is now producing at a rate close to 2 million tons a year.



Jones and Laughlin's Pittsburgh Works electric furnace shop prepares to receive a backcharge.

These numbers are part of a continuing trend toward electric steel making. In addition to the Bethlehem and Crucible shops, new furnaces are being brought on stream this year by Chaparral Steel Corp., Nucor Corp., Florida Steel Corp., Bayou Steel Corp., Armco, Inc., and Kentucky Electric Steel Co.

These projects bring the 1981 capacity addition to more than 4 million tons. Since the start of 1979, the projects completed or announced come to more than 7 million tons.

Not all the new furnaces are king-sized, but in large shops or small, there is rapid technical progress. If anything, the mini-mills have taken the lead in applying new technology.

At Midlothian, Tex., the new furnace of Chaparral Steel is being equipped with water-cooled side walls, a water-cooled roof and oxy-fuel burners. Complete water cooling has been standard at Chaparral.

"The new one will start up with all that equipment," says R. E. Lincoln, superintendent of steel production. "We're pushing to get the melt shop started in late November or early December," he adds.

The new furnaces of Bayou Steel have highly sophisticated electrical controls and hot metal transfer systems. "We're set up to do ladle metallurgy," says Michael Neiderkorn, marketing vice president for Bayou.

With a transformer rating of 92 mva, the 150 ton arc furnace of Raritan River Steel Co. is one of the hottest in the world.

However, it is in the Pittsburgh area that the biggest test of new electric furnace technology is coming. Nearly 4 million tons of ultra high powered capacity is hitting this one general area. If Republic Steel Corp. goes ahead with a proposed shop at Warren, Ohio, the total will be close to 5 million.

It is a testing experience when you turn on enough juice to light 60,000 homes. That's the kind of power J&L is working with at Pittsburgh. The effect of the enormous energy input is to change the nature of the process.

"You come out of running lower-powered furnaces with experience that doesn't necessarily fit ultra high power," says R. M. Visokey, general superintendent of steel production at J&L's Pittsburgh Works.

"Particularly the way the furnace melts out," continues Mr. Visokey. "These have so much power that it comes down and it just blows holes in the scrap almost like an inverted cone.

How New Electric Furnaces Are Helping Steel Produce More

	Annual Capacity, Tons	Number of Furnaces	Heat Size, Tons	Power	Furnace Size	Electrode Size
1981 Startup						
Bethlehem Steel Corp., Johnstown, PA	1.2 million	2	185	120 mva	24 ft.	28 in.
Crucible Steel, Midland, PA	1.0 million	2	175	85 mva	24 ft.	26 in.
Bayou Steel Corp., La Place, LA	650,000	2	70	60 mva	18 ft.	
Chaparral Steel Co., Midlothian, TX	550,000	1	140	70 mva	22 ft.	24 in.
Florida Steel Corp., Jackson, TN	500,000	1	135	50 mva	20 ft.	20 in.
Armco, Inc., Baltimore, MD	*	1	50	22 mva	15 ft.	18 in.
Nucor Corp., Plymouth, UT	400,000	2	67	30 mva	15 ft.	18 in.
Kentucky Electric Steel Co.	250,000	2	40-50	25 mva	14 ft.	18 in.
1981 Additions	**4.55 MillionTons**					
Recent or Coming						
Jones & Laughlin Steel Corp., Pittsburgh, PA	1.7 million	2	370	137/154 mva	32 ft.	28 in.
Raritan River Steel Corp., Perth Amboy, NJ	500,000	1	150	92 mva	20 ft.	
North Star Steel Co., Monroe, MI	450,000	2	120	75 mva	19 ft.	24 in.
Structural Metals, Seguin, TX	100,000	1	70		18 ft.	22 in.
Quanex Corp., Fort Smith, AR	280,000	2	60			
Babcock & Wilcox, Koppel, PA	*	1	75	60/67 mva	20 ft.	24 in.
Total Recent or Coming	**3.03 MillionTons**					
Grand Total	**7.58 MillionTons**					

*Specialty Steel

Apart from operating practice, the buildup of electric furnace capacity will test the availability and quality of scrap in the Pittsburgh district.

"We're in one of the toughest markets for scrap," says Louis Field, manager of steel operations and practice for Bethlehem.

Bethlehem prepared for its startup by stockpiling both scrap and reduced iron at Johnstown. Some 20,000 tons of FIOR iron briquettes were provided.

The Johnstown furnaces were built by Lectromelt. The overall project was handled by Dravo Corp. Dravo's turnkey contract covered design, engineering, procurement, construction and startup.

Highly computerized control pulpits are provided for each of the Johnstown furnaces. "It has the most advanced computer control of any shop in the world," says F. J. Weiss, manager of metallurgical processes for Dravo.

Like Bayou Steel, Johnstown taps into ladles resting on transfer cars. The plant is shooting for a tap-to-tap time of 2½ hours. Oxy-fuel burners were not provided initially, but there are side wall ports for injection of carbon and oxygen. Side walls are water cooled.

Mr. Field is hopeful fuel burners will be installed in the future. "They're very effective in getting scrap off the side walls," he says.

The Johnstown shop is equipped with overhead feed bins for alloys and fluxes. Because the building was originally put up for oxygen vessels, there is plenty of overhead room.

For emission control, the Johnstown furnaces have direct evacuation systems and overhead canopies. In addition, the furnaces are enclosed on three sides.

Johnstown makes medium alloys and a lot of resulfurized steel for bars and rod. About 75 pct of the plant's output is killed, hot topped steel. With this mix, Mr. Field indicates, a secondary refining system would make sense.

"The next step," he says, "would be a vacuum arc degasser."

Babcock and Wilcox is providing a vacuum arc system to go with its new electric furnace at Koppel, Pa. The MacSteel Division of Quanex Corp. has both a vacuum degasser and a Scandinavian lance injection system at Jackson, Mich.

Producing alloy and stainless steels, Crucible's Midland plant has had long experience with secondary treatment. Midland's new electric furnace shop will have access to vacuum degassing, AOD and vacuum remelting facilities.

For an understanding of where electric furnace technology stands today, it's worth taking a close look at J&L's Pittsburgh shop. Started in May of 1979, the Pittsburgh furnaces have been operating long enough to give a good reading on benefits and problems.

The J&L furnaces also rate special attention because they are close to the ultimate in terms of size and power. The 370-ton heats produced by J&L are topped only by the 400-ton batches of Northwestern Steel & Wire Co. On the basis of power input, the Pittsburgh furnaces go beyond even Northwestern.

"Although their transformer is slightly bigger than ours, we have the most power into the bath of any furnace in the world," says P. J. Grandy, works engineer at Pittsburgh. "We typically run about 92 megawatts and we could easily put 100 in."

Measuring 32 ft across, the J&L furnaces were built by Swindell. Dravo provided the overall shop design, which involved working around openhearths still in service.

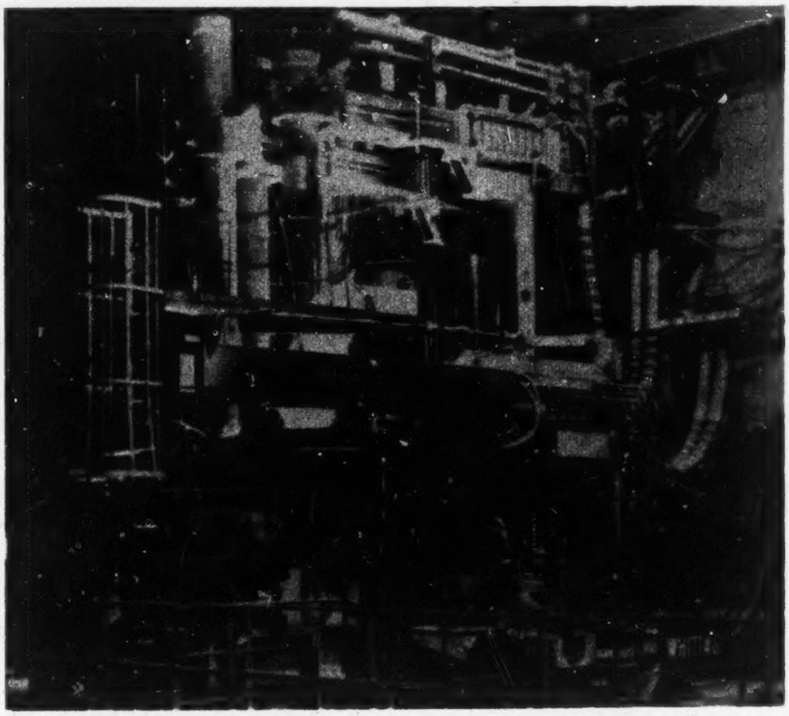
The Pittsburgh shop had its share of early headaches, but operators have mastered the basic job of making giant furnaces perform in a satisfactory manner. The furnaces produced over 1.2 million tons in 1980. Output was held down last year by the market slump.

In the first quarter of 1981, one furnace was shut down for modifications. Despite the production loss, the shop turned out nearly 760,000 tons in the first half. The production rate in the second quarter approached the designed capacity of 1.7 million tons.

"I'd say we're close to 1.6 million tons this year," says Mr. Visokey. "We're running a little bit under 100 tons per net furnace hour."

With 370-ton heats, the best tap-to-tap average over a month has been 3 hours and 38 minutes. The target is 3 hours and 34 minutes. That breaks down into 1 hour and 40 minutes melting, 38 minutes refining, and 55 minutes power off.

"We have run at 97 pct of capacity for a month," says Mr. Visokey. "Our people are pretty well trained now. We have not achieved 100 pct. A few problems come back to haunt us."



Armco's new 50-ton electric arc furnace is now fully operational at the firm's Stainless Steel division plant in Baltimore.

There are lingering problems, but experience to date has established the economic soundness of J&L's big electric furnaces. "They're certainly an improvement over the openhearths," says J. E. Eakin, works manager at Pittsburgh. For equivalent grades, says Mr. Eakin, the electric furnaces are "as good as the best BOF's."

Direct comparisons can be misleading because of differences in product mix. For seamless and other grades, Pittsburgh can have alloy costs $13 a ton higher than a typical BOF shop.

Adjusting for this kind of thing, says Mr. Visokey, the electric furnaces "will come in with a slightly better cost than the BOF."

Looking back, J&L might have done things a little differently at Pittsburgh, but the company is satisfied it was right in its basic decision to install electric furnaces.

"There are no second thoughts at all about the choice of electrics versus BOF's," says Mr. Visokey.

The choice will probably look even better in the near future. Pittsburgh operators hope to reduce their electrode consumption. This has been cut from 20 lb a ton down to 12 or 13 lb a ton, but the shop would like to get down to 9 or 10 lb.

"Our major problem is breakage," says Mr. Visokey. "The problem, I believe, stems from the type of charge we have to melt."

Pittsburgh Works uses a lot of home scrap from other J&L plants. This tends to be dense material—ingot butts and the like. The large scrap hunks can wind up at the top of the charge. Along with the melting characteristics of the high-powered furnace, the top heavy distribution can cause cave-ins.

"The scrap falls in and the electrodes can't be retracted fast enough," says Mr. Visokey.

To promote stability, J&L is thinking of putting all the heavy scrap in the first bucket and then adding light material. "The problem is the availability of light scrap," says Mr. Visokey.

Down the road sometime, the plant will probably go to redesigned scrap buckets. Another change will make more light scrap available but it could create other problems. The Pittsburgh plant has been operating with only about 35 pct purchased scrap. The plant has been able to draw on accumulations from other company plants where the availability of blast furnace iron makes scrap quality less critical.

Pittsburgh will continue to get scrap from other mills but as stocks are reduced, there will have to be greater reliance on purchased material. The original plan called for 45 pct purchased scrap. "That was before the merger," notes Mr. Eakin. The availability of scrap from Indiana Harbor and Youngstown has scaled down outside requirements.

Nevertheless, J&L will probably be purchasing somewhat more scrap for Pittsburgh. At the same time, Crucible's Midland furnaces and Bethlehem's Johnstown shop are coming on stream.

Just how that added melting capacity will affect scrap prices remains to be seen. J&L's Pittsburgh project was based partly on the assumption that scrap would be favorably priced in most markets. Scrap prices in the area have been steady since the electric furnaces came on stream in May of 1979.

Like all others with electric furnaces, J&L is concerned about the buildup of residuals in scrap. This concern is reflected in trials of reduced iron.

The Pittsburgh electric furnaces are equipped with water-cooled side walls. Water cooling has become standard practice now, but there can be problems with the panels.

"If you hit one with scrap or have an arc bouncing an ingot butt, it burns your panel," says Mr. Visokey, "It begins to leak in an area that you don't really see."

The water dripping down can cause hidden deterioration of refractories in the lower part of the furnace. "That's what happened to us," says Mr. Visokey. "The steel managed to penetrate back to that wet stuff. It exploded. It went right through the shell and we lost our furnace for two weeks."

To prevent a recurrence, J&L put in a safety lining of water resistant brick. There is still leakage, but the lining has proven effective in cases where the working lining eroded.

"The other thing we did is we removed the shell so we could see the backside of the panel," says Mr. Eakin.

J&L had already built a conventional shell when the advantages of water cooling became apparent. With the panels, the shell is superfluous. There are numerous panel suppliers and J&L has tried most of the designs available.

"We are leaning right now toward the Demag panel," says Mr. Visokey.

Problems with water cooling have not been confined to J&L, he indicates. "I guess everybody in the industry could give you a war story," he says. However, the benefits have far outweighed the headaches.

"Absolutely," says Mr. Visokey. "There's no question it's cost effective. With the high powered furnace we have, I don't believe we could keep hot spots off the face. I don't think we could run 150-200 consecutive heats. The main reason we go in at 150 to 170 heats is to change our tap holes."

J&L doesn't feel the technology of panels has stabilized. "We're not necessarily satisfied with the life we have at this point," says Mr. Grandy. "We feel we have a long way to go. We're working on it."

J&L is operating with a conventional refractory roof at Pittsburgh. A typical electric furnace shop will change roofs 6 or 7 times a month. "Unfortunately," says Mr. Visokey, "with the power we have and other problems, we're changing roofs 11 or 13 times a month."

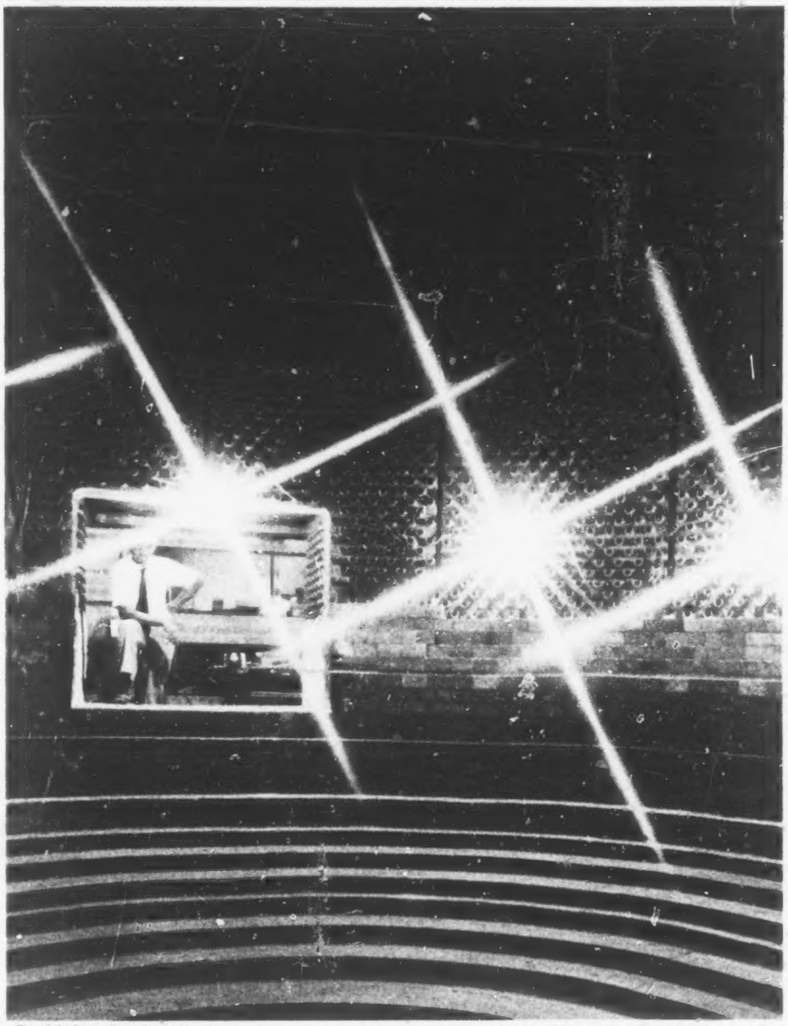
The change takes about an hour and is a routine thing, but each replacement costs about $90,000. Water cooled roofs are even more expensive. The roof, itself, costs $400,000. With all the pumps and pipes and heat exchangers, the complete roof system comes to $3 or $4 million.

"But replacing the roof thereafter is $400,000 a piece. If you figure you get 1,500 heats out of it, the economics are there," says Mr. Visokey.

He is also impressed with the advantages of oxy-fuel burners. Every electric furnace has its own individual cold spot, he says. "The scrap melting in these areas is the last thing that happens. If you can aim an oxy-fuel burner in that area, you get all that scrap melting. You're going to pick up time. Also, I think there would be more uniform refractory wear and a reduction in refractory consumption."

J&L has no plans for secondary refining at Pittsburgh Works. "We do have the capability to do steel ladle desulfurization," says Mr. Visokey. "We have not found from a quality or economic standpoint it is justified for production use."

The plant has looked at doing some trimming and cleansing in the ladle. "We really make the chemistries in the ladle," Mr. Visokey points out. "All we're using the furnace for is to get the right temperature and carbon. The only furnace addition we make is moly."



Bethlehem's electric furnace shop at Johnstown, Pa., is designed for production of one million tons or more.

In its leap to high power and giant size, J&L ran into its most serious problems in fairly conventional areas. There were difficulties with the fourth hole emission system. The ductwork for this has been modified and the system is now working well.

The arms for the bus tubes have been modified and there is continuing work in this area.

For all the progress that has been made by electric furnace people, there is no sign technology is coming to rest. "The future lies with plasma torches," says J. F. Kroker, manager of mechanical products for U. S. Steel's American Bridge Division. "You can get an awful lot of power in a small space," adds Mr. Kroker, whose company built the furnaces at Nucor's Utah plant.

What's needed, he says, is longer plasma torch life. "That was the problem at U. S. Steel." More than 10 years ago, U. S. Steel shelved its plasma melting program after unsatisfactory results.

The torches have been improved since then, but Mr. Kroker feels further development is needed.

Gaining fast acceptance today is the use of combustion as an energy supplement. "Oxy-fuel burners are coming on strong," says Mr. Kroker.

Mr. Bello of Lectromelt agrees the fuel burner has a big future. "It's a meltdown assist and a metallurgical control," he says.

Mr. Bello sees the role of the electric furnace changing. "It's a melting machine. You're just delivering melted metal."

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IS CLEAN AIR A CASE OF WHAT YOU SEE, WHAT YOU GET?

Steel producers don't want rules that call for perfection.

By George J. McManus

What does the steel industry want in the way of environmental regulations?

It's clear enough what isn't wanted. Steel producers don't want laws and rules that call for perfection. The legislation now in force could be used to demand the ultimate degree of purity.

"If all provisions of these acts were implemented, it would require a further expenditure of $7.7 billion," says E. F. Young, vice president, energy and environment, American Iron & Steel Institute (AISI).

What hasn't been clear is the specific language steel companies want written into the air and water laws. This is of burning importance because the Clean Air Act is now up for reauthorization. The Water Act will come up for renewal in 1982.

At first glance, it might seem a simple task to formulate proposals for new legislation. It isn't. The difficulties in this regard are brought out by the approach to secondary standards. Once primary health standards have been satisfied, the law calls for looking at pollution in terms of aesthetic, social and other considerations.

Steel producers fear this broad secondary target will open the door for unreasonable demands. It would seem logical, therefore, for steel companies to push for deletion of the welfare concept. That isn't being done. The official AISI position is that the states should handle the welfare aspects of environmental quality. The federal involvement would be reduced to providing guidelines, but AISI does not call for completely discarding the welfare aim.

The thought seems to be that industry isn't going to persuade legislators that building a sausage works in Yellowstone Park is not a matter of national concern.

"It's a real world we live in," says Mr. Young.

One of the realities steel men face is that any modification of the existing air law will be difficult. "There's going to be an effort made to extend it for a year, I'm sure," says Congressman Eugene V. Atkinson (D. Pa.). "We don't accept extension. We're going to argue long and hard."

The Sept. 30 expiration date made a brief extension inevitable, says Mr. Atkinson, but there will be an all-out effort to amend the Clean Air Act.

The Water Act has a counterpart of

(Cont. on p. MP-15)

Estimated Capital Expenditures for Environmental Control Facilities*

Year Facilities Began Operations	For Water Improvement	For Air Improvement	Millions of Dollars Total
1951-1965	$ 209.6	$ 238.8	$ 448.4
1966	18.8	37.7	56.5
1967	54.7	39.4	94.1
1968	61.5	40.2	101.7
1969	71.0	67.1	138.1
1970	110.0	72.6	182.6
1971	73.4	88.2	161.6
1972	57.0	144.8	201.8
1973	34.7	65.4	100.1
1974	79.4	119.4	198.8
1975	131.8	321.3	453.1
1976	158.7	330.5	489.2
1977	205.7	329.1	534.8
1978	180.8	277.2	458.0
1979	201.2	449.6	650.8
1980	168.2	342.3	510.5
Total 1951 — 1980**	1,879.6	3,015.0	4,894.6
Authorized for 1981 and Later	219.7	641.1	860.8

*Between 1951 and 1974 capital expenditures were for facilities placed in operation. Effective with 1975, the data represents actual capital expenditures made during the year.

**Includes capital expenditures in years prior to 1975 for facilities not placed in operation as of January 1, 1975: $83.1 million for water, $51.4 million for air, $114.5 million in total. Source: American Iron and Steel Institute.

What the Steel Industry Wants in Clean Air Act

The Clean Air Act is up for re-authorization. The American Iron & Steel Institute proposes the following changes:

Ambient Air Quality Standards

The development of ambient air quality should be subject to peer review by scientific committees independent of the regulatory agency.

Secondary Standards

The adoption and implementation of secondary NAAQS should be done only at the option of the states and with full consideration of all energy, economic, and social factors, rather than mandated by federal law.

Deadlines

The deadlines for SIP attainment in the Act should be amended to provide the 42-month period between SIP approval and required attainment that was contemplated in the Act.

Marginal Facilities

Special consideration should be provided for marginally economic facilities to provide that no installation of additional air pollution controls is required on facilities which are to be shut down within five years.

New Source Permits For Nonattainment Areas

New source permitting procedures in nonattainment areas (NAA) should be simplified and made more flexible to reduce the costs and time delays of securing permits. The required control technology for new sources should be Best Available Control Technology (BACT) rather than Lowest Achieveable Emission Rate (LAER).

Bubble Policy

The Act should be amended to provide that EPA need not review each bubble application as a separate SIP revision.

Nonattainment Designations

The states should be directed to apply nonattainment designations only where sound monitoring data justify such designations.

Sections 120—Noncompliance Penalties

The noncompliance penalty policy should be revoked; there is no need for these mandatory penalties in addition to other civil and criminal penalty provisions of the Clean Air Act.

Dual Enforcement

Double enforcement by state and federal authorities should be eliminated.

Visible Emission Limitations and Opacity Requirements

Visible emission limitations and/or opacity requirements should be included in regulations only as indicators, not as substantive rules.

Blacklisting

The blacklisting provision of the Act, allowing EPA to withhold all government contracts from violating companies, should be eliminated.

Construction Moratorium

The moratorium on construction of major new or modified sources should be eliminated from the Act.

the welfare standard. "The Water Act has the goal of zero discharge," says Mr. Young. "Most people acknowledged years ago that it doesn't make sense to go to zero discharge. But it's still in the law. And I can assure you that EPA is doing research work on technology beyond anything we have today to achieve zero discharge."

There is no haziness about the industry's position on this point. "We're working on a package for the Water Act right now," says Mr. Young, "and I think I can say with some confidence that elimination of that goal of zero discharge will be part of it."

One of the most fundamental complaints of the steel industry is that the standards for air quality are based on faulty data. Of special concern to the industry is the particulate ceiling established by the Environmental Protection Agency (EPA). The limit of 75 kilograms per cubic meter is very nearly used up by city traffic and other background sources.

"Their rationale for coming up with 75 kilograms should be subjected to rigorous scientific overview—which it was not," says A. T. DeQuitter, director, environmental control, Crucible Stainless and Alloy Division.

It is one thing to say the standard is wrong, but it is another to come up with a new yardstick. "The federal government is in the process of developing a new criteria doctrine on particulate and sulfur oxide," says Mr. Young. "This development has been going on for years."

EPA's science committee will be reviewing the proposed document on Nov. 15. Draft copies measure several feet thick.

"These studies are so complex it takes awfully good science to understand what they mean and translate them into standards," says Mr. Young.

For proper understanding and translation, say steel producers, the setting of standards should be removed from EPA and given to an independent agency. "We'd like to see some changes in the standards process," says Mr. Young.

On the basis of today's standards, most steel plants are in non-attainment areas. That classification isn't going to change very soon because most of the pollution is coming from non-industrial sources. "The current emission rate for industry is 20 million tons a year," says Mr. Young. "That compares with 395 million tons from other sources."

Regardless of this differential, he continues, industry will bear the brunt of cleanup pressures if an area is considered polluted. "History has shown that as long as there is a job to be done, industry is going to be screwed down."

A specific problem in non-attainment areas is that no new plant can be built if it produces a net increase in emissions. "This is a lid on economic expansion," says C. W. Askins, manager of environmental control for the Babcock & Wilcox tubular group.

B&W barely escaped this lid by getting early clearance for the $80 million electric furnace complex being built at Koppel, Pa. "We applied for a permit to install this plant before the regulation existed," says Mr. Askins. "We were able to grandfather that application."

The expansion lid hasn't been too critical for the steel industry as a whole because most recent projects have involved replacement and modernization rather than added capacity. In these situations, credits from the replaced facilities can be applied to the new construction.

As an example, Crucible's new electric furnace shop at Midland, Pa. was offset by the shutdown of the plant's blast furnaces and coke ovens. The electric furnaces are equipped with the latest pollution controls so there is actually a net reduction in emissions.

In a non-attainment area, the business of establishing credits and obtaining construction permits is aw-

(Cont. on p. MP-18)

Heart attack or stroke could knock you down on your way up.

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fully cumbersome. "It can cost up to a million dollars and take up to three years," says Mr. Young.

In non-attainment areas, AISI would also like to get rid of the requirement for something called LAER—Lowest Achievable Emission Rate. The requirement for new sources should be BACT—Best Available Control Technology, says Mr. Young.

The deadline on clean air are considered completely unrealistic. "Under the schedule of the act at present," says Mr. Young, "our industry is faced with accomplishing by 1982 things that have not yet been defined."

Many of the state implementation plans have yet to be approved by EPA. In the view of AISI, there should be a 42-month interval between the plans and attainment of the required quality. As a practical matter, steel mills are eligible for deadline extensions until 1985. Neither the extensions nor the proposed 42 month interval will have any practical effect in some situations.

"Many of the specialty companies are already in compliance," says Mr. Askins of P&W. "The stretch-out has no bearing on a substantial part of the steel industry."

As much as possible, steel companies would like to see enforcement of the clean air provisions handled by the states. The current setup subjects companies to double jeopardy and conflicting edicts.

Congressman Atkinson cites one case where the Federal regulators say monitoring devices should be placed in open corridors while the state calls for monitors to be enclosed.

The steel industry has developed positive positions on the Clean Air, but it's still easier to find out what's wrong with the existing law than what's needed in the new law. This is partly because of the complexity of the subject. It is also because of the need to drum up public support. Regardless of how the new law is written, the impact will depend on how it is enforced.

In this connection, steel people feel the intent of Congress should be made more explicit in the legislation. It's realized, however, that enforcement will hinge on public sentiment. Accordingly, steel men are telling the world they can't afford to spend $7 billion to meet frivolous regulations. ☐

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EFFECTIVE SEPTEMBER 21, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	235	244	255	207
Buffalo	58	56	55	41
Pittsburgh	376	365	372	296
Youngstown	124	130	140	78
Cleveland	158	158	176	124
Detroit	156	156	189	122
Chicago	539	568	578	417
Cincinnati	93	102	112	70
St. Louis	83	68	83	71
Southern	245	246	250	202
Western	138	147	138	129
U.S. Production	2,205	2,240	2,348	1,757

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/21/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective September 21, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,205	2,240	91,875	77,970
Capability Utilization Rate	74.6	75.7	82.3	70.6

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	25.195	24.488	21.736
Pig Iron** (ton= 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 91.17	$ 91.17	$ 91.83	$ 94.17
No. 2 bundles	$ 62.50	$ 62.50	$ 62.50	$ 67.17
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$101.50	$101.50	$103.50	$103.50
No. 1 steel, Philadelphia	78.50	78.50	78.50	91.50
No. 1 steel, Chicago	93.50	93.50	98.50	87.50
No. 1 bundles, Detroit	93.50	93.50	94.50	93.50
Low Phos., Youngstown	103.50	103.50	106.50	100.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	106.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	121.50
No. 1 mach'y cast., Chi	127.50	127.50	127.50	119.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective September 21, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	84.00-84.50	83.75-84.50	9/21/81
Lead	40.00-46.00	42.00-46.00	9/ 2/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$20
Gold per troy oz.	$463.50
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$430-$440
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$10.65
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in PENANG in Malaysian dollars per kilo.)

Sept. 14—676.02
Sept. 15—675.83
Sept. 16—675.83
Sept. 17—675.26
Sept. 18—674.11

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	72
No. 2 copper wire	64
Light copper	55

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	68
No. 2 copper wire	60
Light copper	51
No. 1 composition	68
No. 1 comp. turnings	66
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	29
Radiators	51

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	48	—49
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE SEPTEMBER 21, 1981

MATERIALS NEWSFRONT

(Effective September 21,1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$101.00 to	$102.00
No. 2 hvy. melting	92.00 to	93.00
No. 1 dealer bundles	119.00 to	120.00
No. 1 factory bundles (auto)	124.00 to	125.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	119.00 to	120.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	122.00 to	123.00
Heavy turnings	92.00 to	93.00
No. 1 RR hvy. melting	116.00 to	117.00
Rails, 2 ft. and under	130.00 to	131.00
Scrap rails, random lgth.	110.00 to	111.00
RR specialties	123.00 to	124.00
No. 1 machinery cast	94.00 to	95.00
Cupola cast	87.00 to	88.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	620.00 to	630.00
18-8 turnings	520.00 to	530.00

Chicago

No. 1 hvy. melting	$ 93.00 to	$ 94.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 dealer bundles	105.00 to	106.00
No. 1 factory bundles (auto)	111.00 to	112.00
No. 2 dealer bundles	71.00 to	72.00
Unburned bundles	59.00 to	60.00
No. 1 busheling	97.00 to	98.00
Shredder scrap	95.00 to	96.00
Machine shop turn.	45.00 to	46.00
Mixed bor. and turn.	46.00 to	47.00
Shoveling turnings	49.00 to	50.00
Cast iron borings	64.00 to	65.00
Low phos. forge crop	114.00 to	115.00
Low. phos. punchings plate ¼ in. and heavier	125.00 to	126.00
Low phos. 2 ft. and under	118.00 to	119.00
No.1 RR hvy. melting	97.00 to	98.00
Scrap rails, random lgth.	94.00 to	95.00
Reroller rails	119.00 to	120.00
Rails, 2 ft. and under	126.00 to	127.00
RR couplers and knuckles	119.00 to	120.00
RR car axles	174.00 to	175.00
No. 1 machinery cast	127.00 to	128.00
Cupola cast	102.00 to	103.00
Stove plate	99.00 to	100.00
Steel car wheels	99.00 to	100.00
Stainless		
18-8 bundles and solids	580.00 to	590.00
18-8 turnings	470.00 to	480.00
430 bundles and solids	120.00 to	125.00
430 turnings	65.00 to	70.00

Philadelphia

No. 1 hvy. melting	$ 77.00 to	$ 80.00
No. 2 hvy. melting	67.00 to	70.00
No. 1 dealer bundles	104.00 to	107.00
No. 2 dealer bundles	50.00 to	53.00
No. 1 busheling	99.00 to	102.00
Shredder scrap	88.00 to	91.00
Machine shop turn.	36.00 to	39.00
Mixed bor. and turn.	36.00 to	39.00
Shoveling turnings	53.00 to	56.00
Clean cast chemical borings	64.00 to	67.00
Low phos. 5 ft. and under	97.00 to	100.00
Low phos. 2 ft. punchings	120.00 to	123.00
Electric furnace bundles	118.00 to	121.00
RR specialties	101.00 to	104.00
Rails, 2 ft. and under	120.00 to	123.00
Cupola cast	76.00 to	79.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 73.00 to	$ 74.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	93.00 to	94.00
No. 2 bundles	43.00 to	44.00
No. 1 busheling	92.00 to	93.00
Drop forge flashings	71.00 to	72.00
Machine shop turn.	32.00 to	33.00
Mixed borings and turn.	28.00 to	29.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	42.00 to	43.00
Heavy breakable cast	58.00 to	59.00
Mixed cupola cast	76.00 to	77.00
Automobile cast	99.00 to	100.00
Stainless		
18-8 bundles and solids	590.00 to	600.00
18-8 turnings	440.00 to	450.00
430 bundles and solids	135.00 to	145.00

Youngstown

No. 1 hvy. melting	$100.00 to	$101.00
No. 2 hvy. melting	64.00 to	65.00
No. 1 dealer bundles	103.00 to	104.00
No. 2 dealer bundles	60.00 to	61.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	27.00 to	28.00
Lphos. plate	103.00 to	104.00
Electric furnace bundles	105.00 to	106.00
Galvanized bundles	88.00 to	89.00

Cleveland

No. 1 hvy. melting	$ 93.00 to	$ 94.00
No. 2 hvy. melting	62.00 to	63.00
No. 1 dealer bundles	109.00 to	110.00
No. 1 factory bundles	111.00 to	112.00
No. 2 bundles	53.00 to	54.00
No. 1 busheling	101.00 to	102.00
Machine shop turn.	20.00 to	21.00
Mixed bor. and turn.	20.00 to	21.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	22.00 to	23.00
Cut structural & plates, 2 ft. and under	125.00 to	126.00
Low phos. punchings plate	125.00 to	126.00
Drop forge flashings	66.00 to	67.00
Foundry steel, 2 ft. & under	101.00 to	102.00
No. 1 RR hvy. melting	118.00 to	119.00
Rails, 2 ft. and under	129.00 to	130.00
Rails, 18 in. and under	130.00 to	131.00
Steel axle turnings	81.00 to	82.00
Railroad cast	130.00 to	131.00
No. 1 machinery cast	130.00 to	131.00
Cupola cast	120.00 to	121.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	550.00 to	560.00
18-8 turnings	425.00 to	450.00
430 bundles	120.00 to	130.00

Buffalo

No.1 hvy. melting	$ 60.00 to	$ 61.00
No. 2 hvy. melting	48.00 to	49.00
No. 1 busheling	67.00 to	68.00
No. 1 dealer bundles	65.00 to	66.00
No. 2 dealer bundles	37.00 to	38.00
Machine shop turn.	10.00 to	11.00
Mixed bor. and turn.	19.00 to	20.00
Shoveling turnings	21.00 to	22.00
Cast iron borings	19.00 to	20.00
Low phos. plate	88.00 to	89.00
Structural and plate, 2 ft. and under	96.00 to	97.00
Rails, 2 ft. and under	74.00 to	75.00
Scrap rails, random lgth.	54.00 to	55.00
No. 1 machinery cast	94.00 to	95.00
No. 1 cupola cast	62.00 to	63.00

St. Louis

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	78.00 to	79.00
Foundry steel, 2 ft.	78.00 to	79.00
No. 1 dealer bundles	86.00 to	87.00
No. 2 bundles	73.00 to	74.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	86.00 to	87.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 88.00 to	$ 89.00
No. 2 heavy melting	83.00 to	84.00
No. 1 dealer bundles	91.00 to	92.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	88.00 to	89.00
Shredder scrap	102.00 to	103.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	91.00 to	92.00
Elec. furnace, 3 ft. & under	83.00 to	84.00
Structural and plate, 2 ft.	111.00 to	112.00
Structural and plate, 4 ft.	102.00 to	103.00
No. 1 RR hvy. melting	91.00 to	92.00
Scrap rails, random lgth.	101.00 to	101.00
Rails, 18 in. and under	120.00 to	121.00
Angles and splice bars	99.00 to	100.00
No. 1 cupola cast	94.00 to	95.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 76.00 to	$ 77.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	94.00 to	95.00
No. 2 bundles	50.00 to	51.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	28.00 to	29.00
Cast iron borings	28.00 to	29.00
Low phos. 18 in. and under	105.00 to	106.00
Rails, random length	90.00 to	91.00
Rails, 2 ft. and under	112.00 to	113.00
No. 1 cupola cast	73.00 to	74.00
Heavy breakable cast	37.00 to	38.00
Drop broken cast	100.00 to	101.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	600.00 to	610.00
18-8 turnings	500.00 to	510.00
430 prepared solids	110.00 to	120.00
410 solids	100.00 to	110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to	$ 60.00
No. 2 hvy. melting	50.00 to	52.00
No. 1 dealer bundles	71.00 to	73.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	71.00 to	73.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	8.00 to	10.00
Shoveling turnings	16.00 to	18.00
No. 1 machinery cast	135.00 to	140.00
Mixed cupola cast	54.00 to	56.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 50.00 to	$ 52.00
No. 2 hvy. melting	42.00 to	44.00
No. 1 dealer bundles	37.00 to	39.00
No. 2 dealer bundles	22.00 to	24.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 48.00 to	$ 50.00
No. 2 hvy. melting	37.00 to	39.00
No. 1 dealer bundles	35.00 to	37.00
No. 2 dealer bundles	18.00 to	20.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	112.00 to	114.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 80.00 to	$ 82.00
No. 2 hvy. melting	69.00 to	71.00
No. 2 bundles	59.00 to	61.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	68.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 97.00
No. 2 hvy. melting	84.00 to	86.00
No. 2 bundles	55.00 to	57.00
Machine shop turn.	18.00 to	20.00
Crushed turnings	40.00 to	42.00
Shredder scrap	95.00 to	97.00
Cut structural plate 2 ft. and under	114.00 to	115.00
Unstripped motor blocks	77.00 to	79.00
Cupola cast	96.00 to	98.00

STEEL PRICES

Codes identify Producers listed in the Key on page 119. (Prices quoted are mill base prices in cents per pound unless otherwise noted and do not reflect extras or surcharges.) N.A. =Not available

Billets, Blooms, Slabs

(Dollars per net ton)

Carbon Rerolling, Midwest	
W5	$366.00
N4	$366.00
West	
C6	$346.00
Carbon Forging, East	
B3(3), C10	$420.00
R3	$427.00
Midwest	
R3, U1, W5	$427.00
W8	$400.00
S1	$420.00
C10	$420.00
K2	$400.00
W5	$400.00
West	
B3(2)	$430.00
C6	$420.00
South	
A7	$400.00
Alloy, East	
R3, C10	$463.00
B3	$459.00
Midwest	
W8, W5	$459.00
S1, U1	$459.00
R3	$463.00
West	
B3	$469.00
C6	$469.00
South	
A7	$436.00

Piling Sheet Steel

(cents per lb)

Midwest	
U1	24.20

Structurals

Carbon, East	
B3(2)	22.90
U1	22.90
Midwest	
A7, N4	22.90
J3, C20	22.90
W8	22.90
I3, T10, U1	22.90
West	
C6	22.85
U1	22.15
B3(2)	22.90
South	
A8, C16, U1	22.90
T10	22.90
High-Strength, Low Alloy, East	
B3(2)	22.90
U1	22.90
Midwest	
N4	22.90
W8	22.90
J3	22.90
U1	22.90
I3	22.90
West	
U1, A7	22.15
B3(2)	22.90
South	
U1, C16	22.90
Wide Flange, Carbon, East	
B3	22.90
U1, A7	22.90
Midwest	
U1	22.90
N4	22.90
I3	22.90
West	
U1	22.15
C6	21.90
South	
A7	19.15

Strip

Hot-Rolled, Carbon, Cut & Mill Edge—all widths, East	
B3, U1	20.80
J3	20.80
Midwest	
A7	18.45
D1	20.80
S1, J3, D1	20.80
W3	20.80
N4	17.50
W5	20.80
U1	20.80
B3, G2, I3, I4, M2, R3, J3, G3	20.80
West	
K1	20.00
B3	24.70
South	
R3	19.50
Cold-Rolled, Carbon Max. 25%, East	
E4	29.75
R7, S10, B4	29.60
P15	24.80
S7	Cmp*
U1	33.25
D1(1)	Cmp*
Midwest	
G4	24.80
I4	26.15
W14	22.95
S1, U1, J4	33.25
J3	Cmp*
T[illegible]	Cmp*
West	
U1	33.25
High-Strength, Hot-Rolled, Low Alloy, Cut Edge & Mill Edge—all widths, East (plus extras)*	
Midwest	
M2, G3, R3, W3, I4, J3, G2	20.80
A7	19.50
S1	20.80
I3	20.80
West	
K1	20.00
South	
R3	19.50
High-Strength, Cold-Rolled, Low Alloy, Mill Edge, East	
R7	29.00
Midwest	
S1	32.00
Alloy, Hot-Rolled, Midwest (plus extras)*	
S1	23.20
G4	25.80
I4	23.95
Alloy, Cold-Rolled, East	
C11, E4, M8	43.35
R7	32.75
B4	42.60
P15	32.10
S1	39.90
Midwest	
I4	41.75
S1	37.65

Sheets

Hot-Rolled, Carbon (18 Ga & Hvyr), East	
B3	20.80
J3	20.80
U1	20.80
Midwest	
A7, U1, B3, G2, G3, I3, M2, R3, W3	20.80
S1, W5, D1	20.80
J3	20.80
I4	19.50
West	
U1	21.30
K1	20.00
South	
R3	20.80
Cold-Rolled, East, Class I	
B3(2), U1	24.65
J3	24.65
Midwest	
B3, I3, G3, R3, M2, U1(2)	24.65
G2, W3, M11	24.65
I4	22.00
J3, A7	23.15
S1, W5, D1	24.65
West	
U1	25.15
South	
R3	24.65
Galvanized (hot-dipped), East	
B3(2)	28.25
Midwest	
J3, D1	27.15
I3, W5, S1	27.15
U1, A7, R3, Y1	26.25
G2, W3, M11	27.15
West	
K1	25.75
South	
U1	27.15
R3	25.25
Enameling, Midwest	
A7, I3, U1, J3	26.15
S1	26.50
Long-Terne, Midwest	
W5	28.30
A7, U1	27.75
R3	27.60

*Composite pricing

Wire Rod

East	
B3(2)	22.35
U1	22.35
Midwest	
A7, N4	22.35
U1	22.35
K2	22.35
J3	22.35
West	
C6	21.45
B3	23.25
U1	22.35
South	
G7	22.35

Tinplate

Electrolytic Tinplate	
Single Reduced (75 lb.)	
East	per base box
B3	$24.94
U1	24.94
Midwest	
B3	$24.94
U1	24.94
J3	24.94
M11	24.94
W3	24.94
W5	24.94
West	
K1	$25.44
U1	25.44
South	
U1	$24.94
Double Reduced (55 lb.)	
Midwest	
M11	$19.89
B3, J3	19.89
U1	19.89
W3	19.89
W5	19.89
West	
K1	$20.39
U1	20.39
South	
U1	$19.89
Black Plate	
Single Reduced (75 lb.)	
East	
B3	$21.83
Midwest	
J3	$21.83
M11	21.83
I3, U1, W5	21.83
W3	21.83
West	
K1	$21.83
U1	21.83
Double Reduced (55 lb.)	
East	
B3	$17.30
Midwest	
M11	$17.30
W5, U1	17.30
J3	17.30
W3	17.30
W5	17.30
West	
U1	$17.30
South	
U1	$17.30

Bars

Carbon Steel, Hot-Rolled (Special quality)	
East	
R3, K3	24.30
R5	23.95
B3(3), J3	23.95
U1, C10	23.95
Midwest	
A7, C20	23.95
N4	23.95
W8, U1, I3, I4	23.95
R3, T10	24.30
K2	23.95
West	
B3	23.95
C6	24.45
U1	23.95
B3	24.70
South	
A8	23.95
A7	23.95
C16	23.95
Cold-Finished Carbon, East	
A11	22.15
M1	24.025
R3	31.50
C21	21.15
J3, L2	30.00
C2	23.025
M9, W10, T11, S8	31.00
N1	24.475
R4	22.25
B4	29.50
M1	23.025
B4, C10	31.00
Midwest	
B5, W10, Y1, W8, R3	31.00
C2	24.675
B1	19.80
L2	30.75
W8, N9	22.525
P3	19.85
W14	22.20
J3	29.50
B5	31.25
West	
B5	31.20
B5	34.90
R3	31.20-34.90
South	
B5	32.85
S16	24.475
C16	24.40
Alloy, Hot-Rolled, East	
B3(2), R5, K3, C-10	26.10
R3	26.35
Midwest	
A7, U1	26.10
I3, C10, W8	26.10
R3	26.35
I4	24.85
J3	26.10
West	
B3	26.10
B5	18.50
C6	26.60
U1	26.10
B3	27.10
South	
A7	24.85
A8	22.35
Alloy, Cold Drawn, East	
L2	35.20
R3, N1, C2	35.40
M1	28.025
R4	25.65
A11	30.50
J3, W10, L2	33.75
T11, S8	34.85
C10	34.85
Midwest	
B5, R3, C10	34.85
C2	28.275
J3, M9, W10	33.20
P3	22.75
B1	22.70
W8, N9	24.15
L2	34.65
B5	35.10
West	
R3	35.20-38.25
B5	35.20
B5	38.25
South	
S16	28.075
C16	28.00
B5	36.75

**70 lb—base weight extra 45¢

***50 lb—base weight extra $1.40

Plates

Carbon Steel, East	
B3(2)	24.25
L4	24.25
P2	24.25
U1	24.25
J3	21.70
Midwest	
A7, B3, G3, R3, G2, S1	24.25
I3, U1, W8, I4, W5	24.25
J3	20.50
West	
A7	24.25
U1	24.25
B3	24.25
C6	24.25
O2	22.75
K1	23.50
South	
R3	24.25
A7	24.25
U1	24.25
Alloy, East	
J3	32.05
P2, U1	32.05
B3, L4	32.05
Midwest	
W8	23.025
B3	32.05
G2, G3	32.05
I4, U1	32.05
West	
B3	32.05
O2	30.55
K1	31.30
South	
A7	27.55

Wire

Carbon Steel Wire, East	
B3(2)	27.10
U1	27.70
A11	22.15
Midwest	
A7, R3	24.60
N4, W7	27.40
J3	25.95
K2	24.20
South	
U1	29.70
A8	22.85
West	
C6	24.95

STEEL PRICES

Producer Key
With Principal Offices

A4	American Cladmetals Co., Carnegie, Pa.
A7	Armco Inc., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A11	Atlantic Wire Co., Branford, Conn.
B1	Baron Drawn Steel Corp., Toledo, Ohio
B3	Bethlehem Steel Corp., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin Steel Co., Harvey, Ill.
C1	Calstrip Corp., Los Angeles
C2	Central States Precision Steel Co., Wichita, Kansas
C6	CF&I Steel Corp., Pueblo, Colo.
C10	Copperweld Steel Co., Warren, Ohio
C11	Crucible Divisions, Colt Industries, Pittsburgh, Pa.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Connors Steel Co., Birmingham, Ala.
C20	Calumet Steel Div., Chicago Heights, Ill.
C21	Cumberland Steel Co., Cumberland, Md.
D1	Detroit Strip Div., Cyclops Corp.
D2	Driver Wilber B., Co., Newark, N. J.
D3	Driver Harris Co., Harrison, N. J.
E3	Enamel Products & Plating Co., McKeesport, Pa.
E4	Elliot Bros. Steel Co., New Castle, Pa.
F1	Firth Sterling, Inc., McKeesport, Pa.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Division, National Steel Corp., Ecorse, Mich.
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owensboro, Ky.
G6	Gibraltar Steel Corp., Buffalo, N. Y.
G7	Georgetown Steel Corp., Georgetown, S.C.
G8	Guterl Special Steel Corp.
H1	Hercules Drawn Steel Corp., Livonia, Mich.
I2	Ingersoll Steel Div., New Castle, Ind.
I3	Inland Steel Co., Chicago, Ill.
I4	Interlake Steel Corp., Chicago
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Calif.
K2	Keystone Consolidated Industries, Inc.
K3	Kentucky Electric Steel Co., Ashland, Kentucky
K5	Kemco Div., Foote Mineral Co., Keokuk, Iowa
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
L5	Litho-Strip Corp., Chicago
M1	Mid-Atlantic Precision Steel Co., Pennsauken, N. J.
M2	McLouth Steel Corp., Detroit
M4	Mid States Steel & Wire Co. Crawfordsville, Ind.
M8	Mill Strip Products Div., National Steel Service Center, National Steel Corp.
M9	Moltrup Steel Products Co., Beaver Falls, Pa.
M11	Midwest Steel Div., National Steel Corp., Portage, Ind.
N1	Northeast Precision Steel Co., Boston, Mass.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle, Wash.
N9	Nelson Steel & Wire Co., Chicago, Ill.
N10	North Star Steel Co., Saint Paul, Minnesota
O2	Oregon Steel Mills, Portland, Ore.
P2	Phoenix Steel Corp., Claymont, Del.
P3	Wyckoff Steel Div., Plymouth, Mich.
P9	Pacific States Steel Co., Niles, Cal.
P13	Penn Dixie Steel Corp., Kokomo, Ind.
P14	Pacific Tube Co., Los Angeles
P15	Philadelphia Steel and Wire Corp., Phila.
R3	Republic Steel Corp., Cleveland
R4	Ramco Steel Co., Buffalo, N. Y.
R5	Roblin Steel Corp., Inc., North Tonawanda, N. Y.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S10	Seneca Steel Service, Buffalo, N. Y.
S16	Southern Precision Steel Co., Gulfport, Miss.
T4	Thomas Steel Strip Co., Warren, O.
T5	Timken Company, Steel Division, Canton, O.
T7	Texas Steel Co., Fort Worth, Tex.
T9	Triumph Electro Corp., Chicago, Ill.
T10	Tennessee Forging Steel Corp., Harriman, Tenn.
T11	Teledyne Columbia-Summerill, Carnegie, Pa.
U1	United States Steel Corp., Pittsburgh, Pa.
W3	Weirton Steel Division, National Steel Corp., Weirton, West Va.
W5	Wheeling-Pittsburgh Steel Corp.
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W10	Wyckoff Steel Div., Ampco-Pittsburgh Corp., Pittsburgh, Pa.
W14	Whittaker Steel Strip Div., Detroit, Mich.

Steel Service Center Prices

Price, Dollars per 100 lb

Cities*	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City Delivery Charge*	Hot-Rolled (10 gage)	Cold-Rolled (20 gage)	Galvanized (16 gage)	Hot-Rolled Strip	Plates	Standard Structurals	Hot-Rolled (merchant)	Cold Finished	Hot-Rolled 8620 As Rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 8620 As Rolled	Cold-Drawn 4140 Annealed
Atlanta	28.73	32.79	38.76	39.65	34.04	32.52	23.63	46.68	57.29	66.13	71.36	80.46
Baltimore	30.38	34.76	38.67	40.50	35.13	32.49	46.18	46.62	54.73	56.66	70.10	74.93
Birmingham	26.96	32.17	37.54	40.33	33.96	33.52	23.36	45.51	40.00	62.65	53.70	82.81
Boston	30.94	36.73	41.68	40.89	36.96	33.62	26.71	42.93	55.21	59.98	65.48	72.08
Buffalo	26.86	32.85	40.41	37.94	36.02	34.99	23.15	46.13	53.31	56.01	67.26	76.82
Chicago	25.71	31.06	33.72	33.03	29.44	28.89	19.44	43.65	46.53	52.46	57.44	65.49
Cincinnati	25.64	30.55	33.20	33.40	30.55	29.77	19.39	42.82	46.82	55.04	59.34	66.44
Cleveland	25.85	33.85	38.96	35.32	32.45	32.53	21.58	44.22	43.35	53.21	51.15	67.65
Denver	31.81	38.42	38.80	41.99	35.45	35.21	23.49	48.34	55.62	65.50	70.48	80.89
Detroit	25.76	30.80	33.92	33.66	30.29	29.40	19.09	42.79	46.54	52.60	59.61	65.90
Houston	27.95	30.09	39.98	44.25	31.99	32.10	23.00	51.65	58.70	65.73	71.01	80.16
Kansas City	27.99	33.86	36.27	33.46	33.53	30.41	21.37	44.48	48.73	54.85	60.25	67.94
Los Angeles	31.65	38.54	40.11	44.00	40.88	38.88	37.28	51.87	63.46	71.79	80.34	88.58
Memphis	30.50	34.39	38.76	38.33	37.43	32.70	24.26	46.10	53.66	61.80	65.97	77.73
Milwaukee	26.03	30.63	33.38	32.59	31.38	29.33	19.22	42.33	45.63	52.02	58.92	66.74
New York	30.05	34.12	39.11	44.95	30.29	28.69	24.39	48.37	53.84	59.20	68.70	74.84
Philadelphia	30.19	34.98	40.47	43.09	34.89	34.17	23.03	47.80	55.04	58.75	70.36	75.23
Pittsburgh	30.11	38.22	38.40	39.54	35.54	35.90	23.65	42.17	58.00	60.10	63.60	75.24
Portland	30.95	36.39	41.27	33.10	32.09	36.14	53.64	54.23	52.94	60.00	66.10	....
San Francisco	30.15	36.86	38.77	44.50	37.18	37.04	33.62	51.93	64.96	73.11	79.66	87.19
Seattle	30.04	35.42	38.09	46.14	32.52	35.79	33.83	54.07	66.32	73.36	79.86	87.97
Spokane	21.08	30.56	33.56	36.69	35.18	25.16	20.32	41.00	42.02	46.30	....	58.32
St. Louis	28.09	34.09	35.91	35.56	30.59	29.72	21.77	43.45	46.90	52.95	60.01	66.90
St. Paul	27.25	32.73	34.40	34.33	30.91	30.01	19.02	43.87	43.99	53.34	60.52	66.32

Base Quantities. All HR products may be combined for quantity. Hot-rolled sheet, 10 ga x 36 x 96—120; Cold-rolled sheet, 20 ga x 36 x 120; Galv. sheet—16 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate ¼" x 84/; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds ¾-2¹⁵⁄₁₆; Cold finished bar—C 1018—1" rounds; Alloy bar—Hot-rolled 8620—1⅝" round; Cold drawn—1" round; Hot-rolled 4140—1⅝" round. Cold drawn—1" round. Check local supplier for additions or deductions from base.

* Prices at all points include metropolitan delivery charges.

NOTE

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PUBLICATION HAVE BEEN FILMED

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Chilton's
IRON AGE
OCTOBER 14, 1981

HOW ONE COMPANY CUTS CORNERS WITHOUT CUTTING QUALITY

ORGANIZING YOUR CAPABILITIES TO SERVE YOUR MARKETS BETTER

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IRON AGE

VOL. 224, NO. 29

OCTOBER 14, 1981

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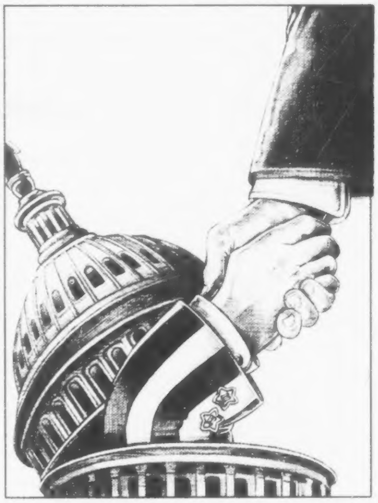
The Reagan tax package provides some relief, but industry lobbyists want more, especially in regulatory areas.



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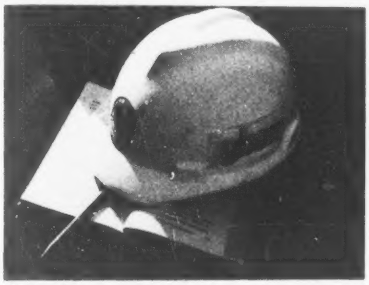


A look at next year's labor-management showdown.

IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

course for domestic steel producers. Steel dumping complaints were headed off in 1977 by the initiation of the trigger system. Formal complaints were again side-tracked in 1980 by reinstatement of trigger prices. Now, another set of complaints may be coming.

Specialty tubing's on the rebound, B&W says

The specialty tubing market appears to have weathered the storm.

That's the observation made by Kenneth R. Walker, marketing manager, Tubular Products Group, Babcock & Wilcox (B&W). "We expect specialty tubing shipments, which have leveled off during the Summer months, to pick up in the Fall and by year's end, to reflect a 15 pct improvement over last year," he says. Total shipments for 1981 are estimated to be 1.553 million tons.

Tubing Shipments Will Rise This Year

In Millions of Tons

	1980	1981
Specialty tubing	1.349	1.553
Mechanical tubing	1.159	1.335
Pressure tubing	.190	.198

Source: Babcock & Wilcox

The 15 pct increase is from a low of 1.349 million tons of specialty tubing shipped in 1980. Mr. Walker estimates that it may take until 1983 for specialty tubing shipments to get back to the high level of 1979.

"It is still too early to see any tangible results from the new Administration except a general increase in confidence," notes Mr. Walker. "The accelerated depreciation and tax programs should mean improved (specialty tubing) business in 1982."

A spot survey taken at the end of spring by B&W, Beaver Falls, Pa., showed distributor inventories to be adequate. However, the slow Summer months have caused specialty tubing inventories to increase and distributors have been working to reduce these levels.

"A general reduction in inventory levels," says Mr. Walker, "seems to be the rule for both distributors and original equipment manufacturers because of the high interest rates."

B&W market forecasters further note that industry-wide shipments of mechanical tubing for 1981 are expected to rise 16.9 pct to 1.335 million tons. The 1979 high was 1.516 million tons and 1980 came in at a very low 1.159 million tons.

The construction and automotive industries still remain flat. Nevertheless, B&W believes the two industries—both of which are markets for mechanical tubing—should improve somewhat in 1982 if the prime interest rate drops to about 15 or 17 pct, as is expected.

In 1982, mechanical tubing markets that are forecasted to show growth above that of the general economy include distributors, oilfield machinery and automotive, according to B&W. Demand for oilfield machinery and other energy-related equipment remains "exceptionally strong," it added.

B&W also believes that bearings, material handling equipment, mining machinery and agricultural machinery should show average growth in 1982.

Separately, B&W reports that shipments of pressure tubing in 1981 are expected to reach 198,000 tons, an increase of 4.1 pct over the 190,381 tons shipped last year.

The modest increase, B&W says, is partly due to the depressed electric utility construction market, which is not expected to rebound until the mid-1980s. "Electric consumption, as measured by kilowatt-hour sales, is growing at only about 3 pct a year. This compares to historical levels of 7.2 pct per year, causing utilities to plan construction of smaller megawatt units. But even with fewer new plants being built, we look for growth in the boiler repair and retrofit business," says Dave Bernard, B&W's assistant marketing manager.

B&W says it expects the heat transfer equipment market, other than utility construction, to grow at about the same rate as the general economy in 1982. The distributor, redraw, and special industrial equipment markets for pressure tubing should also show average growth in 1982, the specialty tubing producer noted. But below average growth is forecasted for the chemical plant and general construction industries.

Rising imports, B&W says, continues to be one of the most serious problems facing the specialty tubing industry today. It noted that imports account for 40-50 pct of some of the high-valued tubing products now being purchased in the U.S.

The growing number of imports is largely due to the fact that many specialty tubing products are not included under the Trigger Price Mechanism. Only recently did stainless pipe and tubing come under a special "surge" provision of the TPM, which prevents imports from exceeding levels of the past 10 years.

Still B&W believes more needs to be done by the Reagan Administration. The company has thrown its support behind a recent American Iron and Steel Institute report which calls on the United States to advise foreign governments to eliminate anti-competitive practices or face countervailing duties on imports.

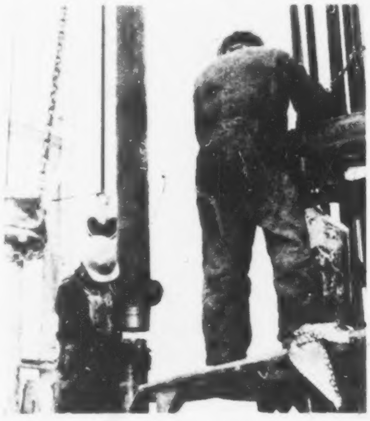
Despite the import situation, B&W says it remains optimistic about the long-term outlook for the specialty tubing industry. After a full economic recovery, a surge of capital spending should occur. Another reason for optimism, B&W says, is that a considerable amount of industrial process equipment is long overdue for replacements. **Susan Parker**

Oilfield demand poses problems for suppliers

The oilfield equipment industry is in the midst of the classic good news-bad news dilemma.

The good news is that the drilling industry is at the highest level of activity in its history and is still growing. "What's more no one knows just how long this boom period is going to last," Robert Harris, president of National Drilling Equipment, recently told a marketing seminar in Dallas.

"The bad news is that in some categories, equipment is just not as available as any of us would like it—extended delivery time on many items has become a frustrating way of life," said Mr. Harris.



Delivery times for some oil field equipment can range up to two years.

For 1981 alone, he noted that National Drilling, a division of Houston-based National Supply Co., estimates

HI-TEMP GALVANIZING SEARCHES FOR GALVANIZERS

High-temperature galvanizing seems to have what it takes to give silicon-killed steels a good coating. But galvanizers are window shopping.

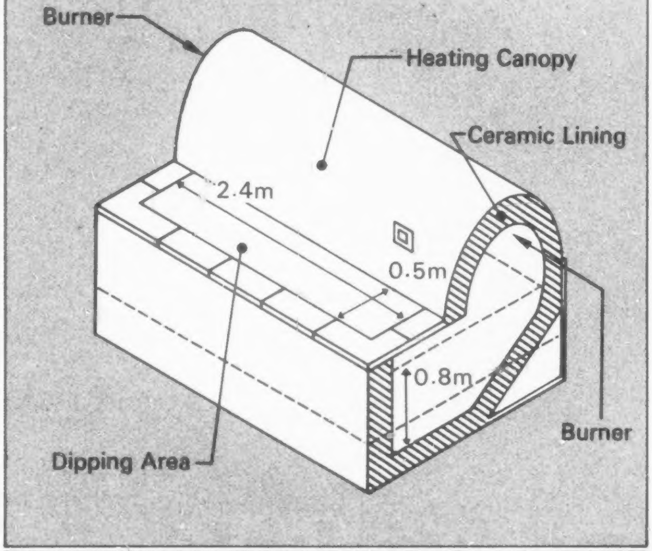
By John J. Obrzut

Silicon-killed steels have plagued hot-dip galvanizers for years. Any attempts to galvanize these steels by conventional methods usually ended in failure. The coatings were thick, gray looking and had very poor adherence.

But this was no ordinary problem. It has been a problem that cut into the very heart and pocketbook of the entire industry. The inability to galvanize these steels satisfactorily was a very serious problem in its own right. But the problem got bigger and bigger as continuous casting came into wider use and as the high-strength low-alloy steels became more prominent.

Structures that were once in the domain of the galvanizers were being lost to them. Bridges, guardrails, power transmission towers and the like that normally had a protective zinc finish were now taking on the appearance of a reddish-brown 'weathering steel' coating—a family of steels which are also silicon bearing. And new coatings were developed.

High-Temperature Kettle Has Ceramic Lining, Top Firing



The impact on the galvanizers was enormous. The frustration of having a huge emerging market at their doorsteps and not being able to touch it was equally great. It was, to put it mildly, a threat to their livelihood.

A solution had to be found for this perplexing problem to protect existing markets for both the galvanizers and zinc producers, to rescue some markets that had already been lost to them, and to generate new and far-reaching markets that the silicon-bearing steels would offer.

With these problems and goals in mind, the International Lead Zinc Research Organization (ILZRO) sponsored research that would, hopefully, "lead to the development of a high-temperature galvanizing process for structural steels that would suppress the reactivity of silicon-killed steels."

Another important aspect of this work would aim at a galvanized coating that would conform in both thickness and quality to international specifications regardless of steel composition or section thickness.

This latter aspect is significant in that the hot-dip galvanizing shop, in general practice, is not given the chemistry of the steel that it processes. The tendency is to treat all materials with the same basic set of conditions. The galvanizer in a job shop, for example, should not be required to distinguish between a rimming steel and a silicon-killed steel.

The project that ILZRO sponsored was undertaken by the British Non Ferrous Metals Technology Centre (BNFMT), U.K. Its conclusions show that high-temperature galvanizing is, indeed, "a viable method of galvanizing structural steels and other components." All low alloy ferrous materials tested had a similar metallurgical behavior in their reaction to molten zinc at 540°C (1004°F) to 570°C (1058°F).

Also, all the steels that the researchers tested met international specifications without grossly exceeding them. Moreover, accelerated corrosion tests showed that the high-temperature coatings had resistance every bit as well as the conventional galvanized coatings. The same was true of the long-term weathering tests.

Adherence of these coatings was good, provided the galvanizing bath contained about 1 pct lead. Their appearance was a uniform light matte gray regardless of steel composition. The finish could be brightened, without "black spotting," by simply adding some aluminum to the bath.

As for the mechanical properties of the steels subjected to the higher temperatures, there were no adverse effects. And steels with tensile strength up to 94,000 psi (650 M/mm^2) had no more reduction in fatigue strength than that induced by galvanizing at the conventional temperature of about 450°C (842°F).

The researchers also confirmed that just about all problems connected with steel composition in the galvanizing of fasteners could be overcome by the high-temperature process. They were able to produce near-specification coatings having good adherence and clean threads.

How High-Temperature Galvanizing Handles 'Problem' Fasteners

Item	Steel	Problems	Galvanizing Temp., °C	Galvanizing Time, s	Coat thickness, μm	Comments
Hexagon 1 in. bolt M10	8-8 0.25% Si	Reactive steel—poor nut fit when galvanized at 460°C.	560	120	44	Clean threads—good adhesion.
Cup head bolt ½ in. Whit x 1¼ in.	S quality 0.24% Si	As above and frequently with flaking problems.	560	120	49	Clean threads—good adhesion.
Cup head bolt ½ in. UNC x 1 in.	S quality 0.24% Si	As 2.	567 545	90 190	29 53	Clean threads—good adhesion.
Stud bolts ¾ in. UNC x 5 in.	B7 0.36% Si	Extreme reactivity at 460°C. Poor adhesion experienced with lead-free baths at 560°C.	560 551	120 150	35 55	Clean threads—good adhesion.
Stud bolts ⅝ in. UNC x 3 in.	B7 0.36% Si	As 4.	550	120	55	Clean threads—good adhesion.
Hexagon bolt M20 x 70mm	8-8 0.28% Si	Reactive steel—poor adhesion when galvanized 460°C.	550	120	54	Clean threads—good adhesion.
Hexagon bolt M16 x 155mm	Mild steel Trace Si	Galvanizes satisfactorily at 460°C but poor adhesion experienced with lead-free bath at 560°C.	548	120	54	Clean threads—good adhesion.
Hexagon bolt M16 x 70mm	Mild steel Trace Si	Galvanizes satisfactorily at both high and low temperature but appearance very grey in lead-free baths at high temperature.	562 565	90 95	54 54	Adhesion good and normal high temperature colour.
Hexagon bolt M16 x 75mm	Mild steel Trace Si	As 8.	560	120	55	As 8.
Hexagon bolt M20 x 60mm	Mild steel Trace Si	As 8.	569 560	135 120	53 53	As 8.
Hexagon bolt 1 in. Whit x 75mm	Mild steel	Thick coating at 460°C with appearance varying from bright to dull from batch to batch.	552	140	55	Normal appearance in bolts from two kinds of batch.
Hexagon set bolts ¼ in. UNF x 1⅜ in.	8-8 0.28% Si	Very fine threads and reactive steel preclude conventional galvanizing.	553 560	120 120	31 40	Clean threads—good adhesion.
Cold formed nuts M16	Mild steel	Smooth surface finish causes poor adhesion on galvanizing at 460°C—rough galvanized coats cause jamming in auto feed.	560	120	44	Good adhesion—smooth appearance of high temperature galvanizing.
Cold formed nuts ½ in. Whit.	Mild steel	Poor adhesion after 560°C in lead-free bath.	560	120	52	Clean threads—good adhesion.
Hot formed nuts M16	Mild steel	Roughness of galvanized coat and samples stuck together at 460°C.	560	120	40	Clean threads—good adhesion.
Hot formed nuts ⅝ in. Whit.	Mild steel	As 17.	560 548	120 120	44 55	Smooth appearance

In their work, the researchers also satisfactorily galvanized cast iron fittings at the higher temperature.

As for the galvanizing operation itself, ash production at the higher temperature was about the same as for conventional galvanizing. Dross production, however, was higher. But the researchers point out that this leads to galvanizing economy with silicon-killed steels because the residuals are sold rather than returned to the customer in the form of extra thick coatings.

What about the equipment? Can galvanizers use their existing pots? Not really and therein lies a problem area. High-temperature galvanizing cannot be done in the traditional steel kettle. Temperatures around 550° to 560°C (1022° to 1040°F) would cause the steel to go into solution very quickly, produce excessive dross and seriously reduce pot life.

High-temperature galvanizing, therefore, requires galvanizers to use a ceramic-lined vessel. It's more costly than a steel kettle but lasts much longer. "The initial investment for a ceramic-lined kettle installation is about twice that for a steel kettle," says Donald C. Herrschaft, manager

(Cont. on p. 76)

of ILZRO's metallurgical section.

"On the other hand," he points out, "ceramic pots have been used for as long as 15 to 20 years in the Scandinavian countries with little signs of wear. Steel kettles may last 15 years but many of them have a life of only 2 to 3 years." Generally, a ceramic kettle will last three to seven times longer than the average steel pot.

One European researcher recalls a ceramic-lined kettle that's been in use for more than 23 years. Still another ceramic-lined pot in the U.K. contains a galvanizing bath of 1100 tons. By contrast, the BNFMT experimental unit is an 18-ton galvanizing bath.

Inasmuch as the kettles for high-temperature galvanizing must be of ceramic-lined construction, they can't be fired externally because they conduct heat poorly. Therefore, heating must be done in one of two ways—either by top or canopy heating (as shown in the drawing) or immersion heating.

Although the original experimental work with high-temperature galvanizing was conducted with the top-fired heaters, the researchers turned much of their attention to gas-fired immersion heating. This work is still in the developmental stage but the results thus far have been very encouraging.

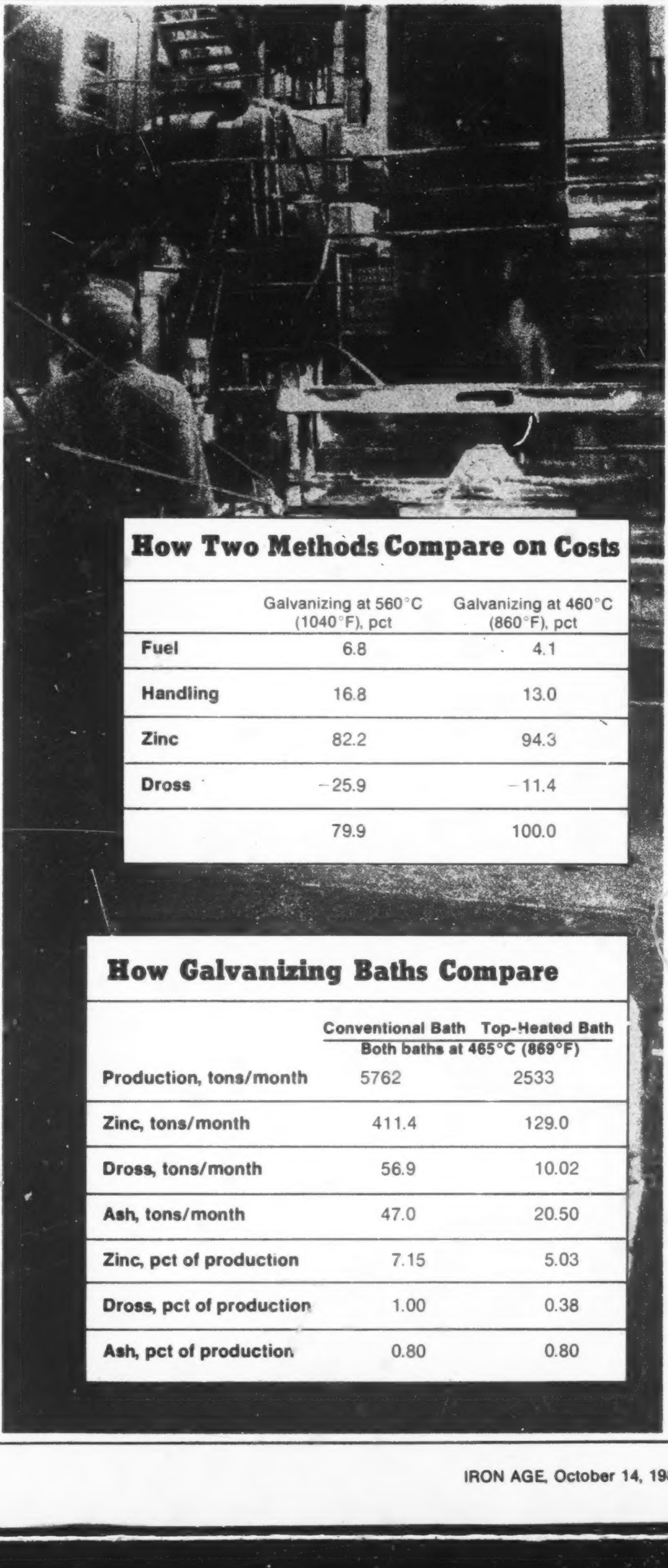
Immersion heating can, say the researchers, improve fuel efficiency by at least 25 pct over the canopy heating method. Such an installation can be made much smaller, require less zinc, have better temperature control and lower thermal gradients when compared to a top-fired kettle.

The operation of top-heated ceramic kettle shows a net zinc cost of 70 pct compared to that of a conventionally heated steel kettle.

As for one of the chief objectives of the research program, that of making coating thickness independent of steel composition especially with the silicon-bearing steels, high-temperature galvanizing does that when carried out in the prescribed manner. The results show no obvious correlation between coating weight and silicon content at the higher temperature as is the case at the conventional galvanizing temperature.

High-temperature galvanizing of fasteners, done in conjunction with centrifuging, shows that the coatings are more uniform in thickness over a wider range of silicon contents than are the coatings done in the usual way at 450°C (842°F).

The work done by BNFMT shows that the best results for coating



How Two Methods Compare on Costs

	Galvanizing at 560°C (1040°F), pct	Galvanizing at 460°C (860°F), pct
Fuel	6.8	4.1
Handling	16.8	13.0
Zinc	82.2	94.3
Dross	−25.9	−11.4
	79.9	100.0

How Galvanizing Baths Compare

	Conventional Bath	Top-Heated Bath
	Both baths at 465°C (869°F)	
Production, tons/month	5762	2533
Zinc, tons/month	411.4	129.0
Dross, tons/month	56.9	10.02
Ash, tons/month	47.0	20.50
Zinc, pct of production	7.15	5.03
Dross, pct of production	1.00	0.38
Ash, pct of production	0.80	0.80

thickness are obtained when the temperature is held within the range of 555° and 560°C (1031° and 1040°F). When the temperature is allowed to drop below that range, the coating becomes excessively thick; when the temperature exceeds that range by much, a thin coating results.

Two batches of structural angles were galvanized satisfactorily at a temperature of 560°C (1040°F) for 2½ to 3 minutes. Coating weight averaged 2.3 oz/ft², well above the specification requirement. The coatings were uniform, smooth, light gray in appearance and had very few runs.

Some of the smaller angles were quenched in water a minute after withdrawal from the galvanizing bath to brighten their finish. This coating, as expected, turned out bright and smooth but was also spangle-free in appearance.

The coatings were satisfactory in every way and exhibited good adherence by not spalling when hit with a chisel-edged hammer. None of the angles showed any signs of distortion even when processed at the higher temperature.

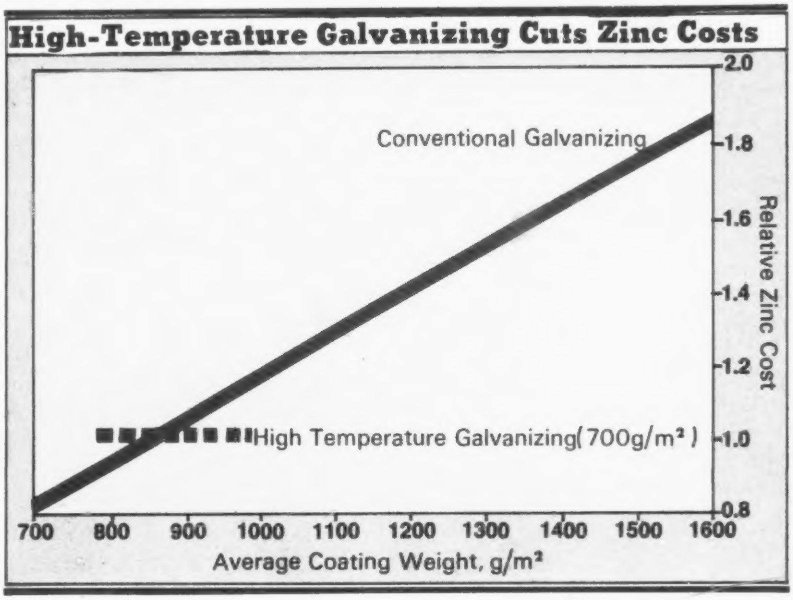
Cast iron fittings—about a ton of them—were also galvanized in the trials. These were of different sizes and shapes and were for insulator caps on transmission lines. After an immersion time of 2½ to 3 minutes, the coatings were galvanized to a coating weight of 2.6 to 3.3 oz/ft². Again, high-temperature galvanizing proved satisfactory.

Four steels tested for their Charpy V-notch impact values after galvanizing at 550°C (1022°F) showed that three of them were slightly higher than the values for either ungalvanized or conventionally galvanized steels. The values for the fourth steel were a shade lower but still exceeded the specification value.

In bend tests in which the specimens of four steels were bent 180° over the specified radius, no cracks were observed. And in reverse bend tests to assess possible strain age embrittlement that may result from the galvanizing temperature cycle, high-temperature galvanizing reduces any such tendency and tends to mitigate the bad effects of cold work.

With weldments, too, high-temperature galvanizing proved satisfactory in tensile, impact and bend tests. In those few cases where the values did not quite measure up, the lesser values were believed to have resulted from weld defects, weld practice or some other cause unrelated to high-temperature galvanizing.

In corrosion tests of steel specimens exposed to three different atmospheres—severe industrial, severe urban and marine—there was "no apparent difference between samples galvanized at low temperature or those galvanized at 560°C." In this case, the galvanizing conditions were selected to produce coatings of the same weights for both processes. It should be pointed out that some specimens at last inspection had been exposed for four years; others for only two years.


High-Temperature Galvanizing Cuts Zinc Costs

From the standpoint of process economics, about 25 pct is gained in fuel efficiency by gas-fired immersion heating as opposed to canopy heating. Canopy-heated or top-heated ceramic galvanizing kettles have been in use in Europe for many years and those in the industry are hard pressed in recalling a failure.

However, they have shortcomings, too. For example, as much as 50 to 100 pct more zinc is needed in them to serve as a medium for heat transfer.

Maintaining accurate temperature control is difficult because the hood's thermal capacity promotes temperature cycling.

Also, ash build-up in the hood cuts thermal efficiency. Waste heat from the canopy is difficult to use because the ash tends to clog heat exchangers. And also, because of the low thermal efficiency of the system and the ash problems, recuperative burners are likewise difficult to use.

It is for these reasons that immersion heating appears so promising. The British Gas Corp. has developed a system of immersion heating which has recuperative burners and secondary recirculation in the combustion tube to improve efficiency.

Now, what about the relative capital costs of the two systems—conventional vs. high-temperature? One researcher determined that the capital cost of a ceramic kettle installation can range from less than that for a steel kettle setup to as much as 30 pct more with the difference hinging on the complexity of the steel kettle installation. As mentioned earlier, a good chunk of the extra cost for the ceramic bath is in the larger zinc inventory.

Maintenance costs favor the ceramic kettles. First, they do have a longer life and failures are almost non-existent.

As for operating costs, the major difference lies in the cost of zinc. The high-temperature galvanizing produces more dross, which is saleable at a lower price, but doesn't waste zinc with coatings that are too thick. Relative zinc costs for both methods of galvanizing are shown in the chart.

Still another aspect involving costs has to do with the fact that galvanizers charge their customers by the weight of the steel they push through their plant. But if they're applying a heavier zinc coating to the steel than the specification requires of them, they're giving money away unnecessarily. That's where high-temperature galvanizing has the advantage by providing tighter control over coating thickness. ☐

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EFFECTIVE SEPTEMBER 28, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	251	235	265	207
Buffalo	59	58	57	41
Pittsburgh	358	376	362	296
Youngstown	128	124	131	78
Cleveland	169	158	165	124
Detroit	147	156	176	122
Chicago	524	539	543	417
Cincinnati	92	93	107	70
St. Louis	88	83	87	71
Southern	245	245	245	202
Western	143	138	140	129
U.S. Production	2,204	2,205	2,278	1,757

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/21/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective September 28, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,204	2,205	94,079	79,852
Capability Utilization Rate	74.5	74.6	82.1	70.5

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	25.195	25.195	22.019
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 88.17	$ 91.17	$ 91.17	$ 94.17
No. 2 bundles	$ 59.17	$ 62.50	$ 62.50	$ 68.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$101.50	$101.50	$101.50	$103.50
No. 1 steel, Philadelphia	78.50	78.50	78.50	91.50
No. 1 steel, Chicago	84.50	93.50	93.50	87.50
No. 1 bundles, Detroit	83.50	93.50	93.50	93.50
Low Phos., Youngstown	95.50	103.50	103.50	100.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	106.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	121.50
No. 1 mach'y cast., Chi	124.50	127.50	127.50	119.50

* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective September 28, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	81.10-84.00	83.60-84.00	9/28/81
Lead	40.00-46.00	42.00-46.00	9/ 2/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	49.25	46.25-49.25	8/ 4/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$20
Gold per troy oz.	$450.50
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$430-$440
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.05
Vanadium	$8.42
Zirconium sponge	$12.00-$20.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in PENANG in Malaysian dollars per kilo.)

Sept. 21—665.15
Sept. 22—668.93
Sept. 23—667.99
Sept. 24—667.99
Sept. 25—668.36

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	71
No. 2 copper wire	63
Light copper	54

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	67
No. 2 copper wire	59
Light copper	50
No. 1 composition	68
No. 1 comp. turnings	66
Hvy. yellow brass solids	42
Hvy. yellow brass turnings	29
Radiators	51

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	18	—19
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	62	—63
No. 2 copper wire	52	—53
Light copper	48	—49
Radiators	42	—43
No. 1 composition	56	—57
No. 1 composition turn'gs	54	—55
Cocks and faucets	39	—40
Clean heavy yellow brass	34	—35
Brass pipe	39	—40
New soft brass clippings	49	—50
Yellow brass rod ends	42	—43
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	160	—175
Nickel rod ends	160	—175
Nickel sheets, clips	160	—175
Nickel turnings	110	—115
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE SEPTEMBER 28, 1981

MATERIALS NEWSFRONT

(Effective September 28,1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$101.00 to $102.00
No. 2 hvy. melting	92.00 to 93.00
No. 1 dealer bundles	114.00 to 115.00
No. 1 factory bundles (auto)	114.00 to 115.00
No. 2 bundles	64.00 to 65.00
No. 1 busheling	114.00 to 115.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos. punchings plate	115.00 to 116.00
Heavy turnings	92.00 to 93.00
No. 1 RR hvy. melting	103.00 to 104.00
Rails, 2 ft. and under	118.00 to 119.00
Scrap rails, random lgth.	101.00 to 102.00
RR specialties	115.00 to 116.00
No. 1 machinery cast	94.00 to 95.00
Cupola cast	87.00 to 88.00
Heavy breakable cast	39.00 to 40.00
Stainless	
18-8 bundles and solids	610.00 to 620.00
18-8 turnings	510.00 to 520.00

Chicago

No. 1 hvy. melting	$ 84.00 to $ 85.00
No. 2 hvy. melting	77.00 to 78.00
No. 1 dealer bundles	95.00 to 96.00
No. 1 factory bundles (auto)	98.00 to 99.00
No. 2 dealer bundles	61.00 to 62.00
Unburned bundles	54.00 to 55.00
No. 1 busheling	92.00 to 93.00
Shredder scrap	90.00 to 91.00
Machine shop turn.	43.00 to 44.00
Mixed bor. and turn.	44.00 to 45.00
Shoveling turnings	47.00 to 48.00
Cast iron borings	59.00 to 60.00
Low phos. forge crop	109.00 to 110.00
Low. phos. punchings plate ¼ in. and heavier	120.00 to 121.00
Low phos. 2 ft. and under	113.00 to 114.00
No.1 RR hvy. melting	87.00 to 88.00
Scrap rails, random lgth.	84.00 to 85.00
Reroller rails	109.00 to 110.00
Rails, 2 ft. and under	116.00 to 117.00
RR couplers and knuckles	109.00 to 110.00
RR car axles	164.00 to 165.00
No. 1 machinery cast	124.00 to 125.00
Cupola cast	97.00 to 98.00
Stove plate	97.00 to 98.00
Steel car wheels	96.00 to 97.00
Stainless	
18-8 bundles and solids	580.00 to 590.00
18-8 turnings	470.00 to 480.00
430 bundles and solids	120.00 to 125.00
430 turnings	65.00 to 70.00

Philadelphia

No. 1 hvy. melting	$ 77.00 to $ 80.00
No. 2 hvy. melting	67.00 to 70.00
No. 1 dealer bundles	104.00 to 107.00
No. 2 dealer bundles	50.00 to 53.00
No. 1 busheling	99.00 to 102.00
Shredder scrap	88.00 to 91.00
Machine shop turn.	34.00 to 37.00
Mixed bor. and turn.	34.00 to 37.00
Shoveling turnings	52.00 to 55.00
Clean cast chemical borings	64.00 to 67.00
Low phos. 5 ft. and under	97.00 to 100.00
Low phos. 2 ft. punchings	120.00 to 123.00
Electric furnace bundles	118.00 to 121.00
RR specialties	101.00 to 104.00
Rails, 2 ft. and under	120.00 to 123.00
Cupola cast	76.00 to 79.00
Heavy breakable cast	65.00 to 68.00
No. 1 machinery cast	116.00 to 119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to $ 69.00
No. 2 hvy. melting	67.00 to 68.00
No. 1 dealer bundles	83.00 to 84.00
No. 2 bundles	38.00 to 39.00
No. 1 busheling	82.00 to 83.00
Drop forge flashings	71.00 to 72.00
Machine shop turn.	32.00 to 33.00
Mixed borings and turn.	28.00 to 29.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	38.00 to 39.00
Heavy breakable cast	56.00 to 57.00
Mixed cupola cast	69.00 to 70.00
Automobile cast	89.00 to 90.00
Stainless	
18-8 bundles and solids	550.00 to 560.00
18-8 turnings	400.00 to 410.00
430 bundles and solids	120.00 to 130.00

Youngstown

No. 1 hvy. melting	$ 92.00 to $ 93.00
No. 2 hvy. melting	57.00 to 58.00
No. 1 dealer bundles	96.00 to 97.00
No. 2 dealer bundles	52.00 to 53.00
Machine shop turnings	17.00 to 18.00
Shoveling turnings	27.00 to 28.00
Low phos. plate	95.00 to 96.00
Electric furnace bundles	96.00 to 97.00
Galvanized bundles	80.00 to 81.00

Cleveland

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	56.00 to 57.00
No. 1 dealer bundles	101.00 to 102.00
No. 1 factory bundles	103.00 to 104.00
No. 2 bundles	47.00 to 48.00
No. 1 busheling	92.00 to 93.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	22.00 to 23.00
Cut structural & plates, 2 ft. and under	117.00 to 118.00
Low phos. punchings plate	117.00 to 118.00
Drop forge flashings	60.00 to 61.00
Foundry steel, 2 ft. & under	93.00 to 94.00
No. 1 RR hvy. melting	100.00 to 101.00
Rails, 2 ft. and under	121.00 to 122.00
Rails, 18 in. and under	122.00 to 123.00
Steel axle turnings	81.00 to 82.00
Railroad cast	130.00 to 131.00
No. 1 machinery cast	130.00 to 131.00
Cupola cast	120.00 to 121.00
Stove plate	90.00 to 91.00
Stainless	
18-8 bundles	525.00 to 535.00
18-8 turnings	375.00 to 400.00
430 bundles	120.00 to 130.00

Buffalo

No.1 hvy. melting	$ 60.00 to $ 61.00
No. 2 hvy. melting	48.00 to 49.00
No. 1 busheling	67.00 to 68.00
No. 1 dealer bundles	65.00 to 66.00
No. 2 dealer bundles	37.00 to 38.00
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	19.00 to 20.00
Low phos. plate	88.00 to 89.00
Structural and plate, 2 ft. and under	96.00 to 97.00
Rails, 2 ft. and under	74.00 to 75.00
Scrap rails, random lgth.	54.00 to 55.00
No. 1 machinery cast	94.00 to 95.00
No. 1 cupola cast	62.00 to 63.00

St. Louis

No. 1 hvy. melting	$ 86.00 to $ 87.00
No. 2 hvy. melting	78.00 to 79.00
Foundry steel, 2 ft.	78.00 to 79.00
No. 1 dealer bundles	86.00 to 87.00
No. 2 bundles	73.00 to 74.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	35.00 to 36.00
No. 1 RR hvy. melting	86.00 to 87.00
Rails, random length	95.00 to 96.00
Rails, 18 in. and under	115.00 to 116.00
RR specialties	98.00 to 99.00
Cupola cast	82.00 to 83.00
Heavy breakable cast	53.00 to 54.00
Stove plate	89.00 to 90.00
Cast iron car wheels	59.00 to 60.00
Rerolling rails	117.00 to 118.00
Unstripped motor blocks	65.00 to 66.00

Birmingham

No. 1 heavy melting	$ 86.00 to $ 87.00
No. 2 heavy melting	81.00 to 82.00
No. 1 dealer bundles	89.00 to 90.00
No. 2 bundles	69.00 to 70.00
No. 1 busheling	88.00 to 89.00
Shredder scrap	102.00 to 103.00
Machine shop turn.	33.00 to 34.00
Shoveling turnings	41.00 to 42.00
Cast iron borings	39.00 to 40.00
Electric furnace bundles	91.00 to 92.00
Elec. furnace, 3 ft. & under	83.00 to 84.00
Structural and plate, 2 ft.	111.00 to 112.00
Structural and plate, 4 ft.	99.00 to 100.00
No. 1 RR hvy. melting	91.00 to 92.00
Scrap rails, random lgth.	91.00 to 92.00
Rails, 18 in. and under	109.00 to 110.00
Angles and splice bars	99.00 to 100.00
No. 1 cupola cast	94.00 to 95.00
Unstripped motor blocks	71.00 to 72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to $ 69.00
No. 2 hvy. melting	64.00 to 65.00
No. 1 dealer bundles	84.00 to 85.00
No. 2 bundles	45.00 to 46.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	28.00 to 29.00
Cast iron borings	28.00 to 29.00
Low phos. 18 in. and under	98.00 to 99.00
Rails, random length	83.00 to 84.00
Rails, 2 ft. and under	105.00 to 106.00
No. 1 cupola cast	68.00 to 69.00
Heavy breakable cast	37.00 to 38.00
Drop broken cast	95.00 to 96.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to $ 48.00
No. 2 hvy. melting	42.00 to 43.00
No. 2 dealer bundles	39.00 to 41.00
Mixed bor. and turn.	7.00 to 8.00
Machine shop turn.	18.00 to 20.00
Shoveling turnings	21.00 to 22.00
Clean cast. chem. borings	34.00 to 35.00
No. 1 machinery cast	94.00 to 95.00
Mixed yard cast	62.00 to 64.00
Heavy breakable cast	17.00 to 18.00
Stainless	
18-8 prepared solids	600.00 to 610.00
18-8 turnings	500.00 to 510.00
430 prepared solids	110.00 to 120.00
410 solids	100.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to $ 60.00
No. 2 hvy. melting	50.00 to 52.00
No. 1 dealer bundles	70.00 to 72.00
No. 2 bundles	31.00 to 33.00
No. 1 busheling	70.00 to 72.00
Shredder scrap	72.00 to 74.00
Machine shop turn.	6.00 to 8.00
Shoveling turnings	15.00 to 17.00
No. 1 machinery cast	135.00 to 140.00
Mixed cupola cast	52.00 to 54.00
Heavy breakable cast	16.00 to 18.00

San Francisco

No. 1 hvy. melting	$ 49.00 to $ 51.00
No. 2 hvy. melting	41.00 to 43.00
No. 1 dealer bundles	36.00 to 38.00
No. 2 dealer bundles	21.00 to 23.00
Machine shop turn.	10.00 to 12.00
Cast iron borings	10.00 to 12.00
No. 1 cupola cast	110.00 to 112.00

Los Angeles

No. 1 hvy. melting	$ 47.00 to $ 49.00
No. 2 hvy. melting	36.00 to 38.00
No. 1 dealer bundles	34.00 to 36.00
No. 2 dealer bundles	17.00 to 19.00
Machine shop turn.	10.00 to 12.00
Shoveling turnings	15.00 to 17.00
Cast iron borings	10.00 to 12.00
Elec. furnace, 1 ft. and under (foundry)	111.00 to 113.00
No. 1 cupola cast	120.00 to 122.00

Seattle

No. 1 hvy. melting	$ 79.00 to $ 81.00
No. 2 hvy. melting	68.00 to 70.00
No. 2 bundles	58.00 to 60.00
No. 1 cupola cast	110.00 to 112.00
Mixed yard cast	100.00 to 102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 90.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	68.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	90.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	69.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to $ 97.00
No. 2 hvy. melting	84.00 to 86.00
No. 2 bundles	55.00 to 57.00
Machine shop turn.	18.00 to 20.00
Crushed turnings	40.00 to 42.00
Shredder scrap	95.00 to 97.00
Cut structural plate 2 ft. and under	114.00 to 115.00
Unstripped motor blocks	77.00 to 79.00
Cupola cast	96.00 to 98.00

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

Cover 1, p. 3, 33, 51, 53-

54, 57, 64, 66, 70, 72.

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Chilton's

OCTOBER 26, 1981

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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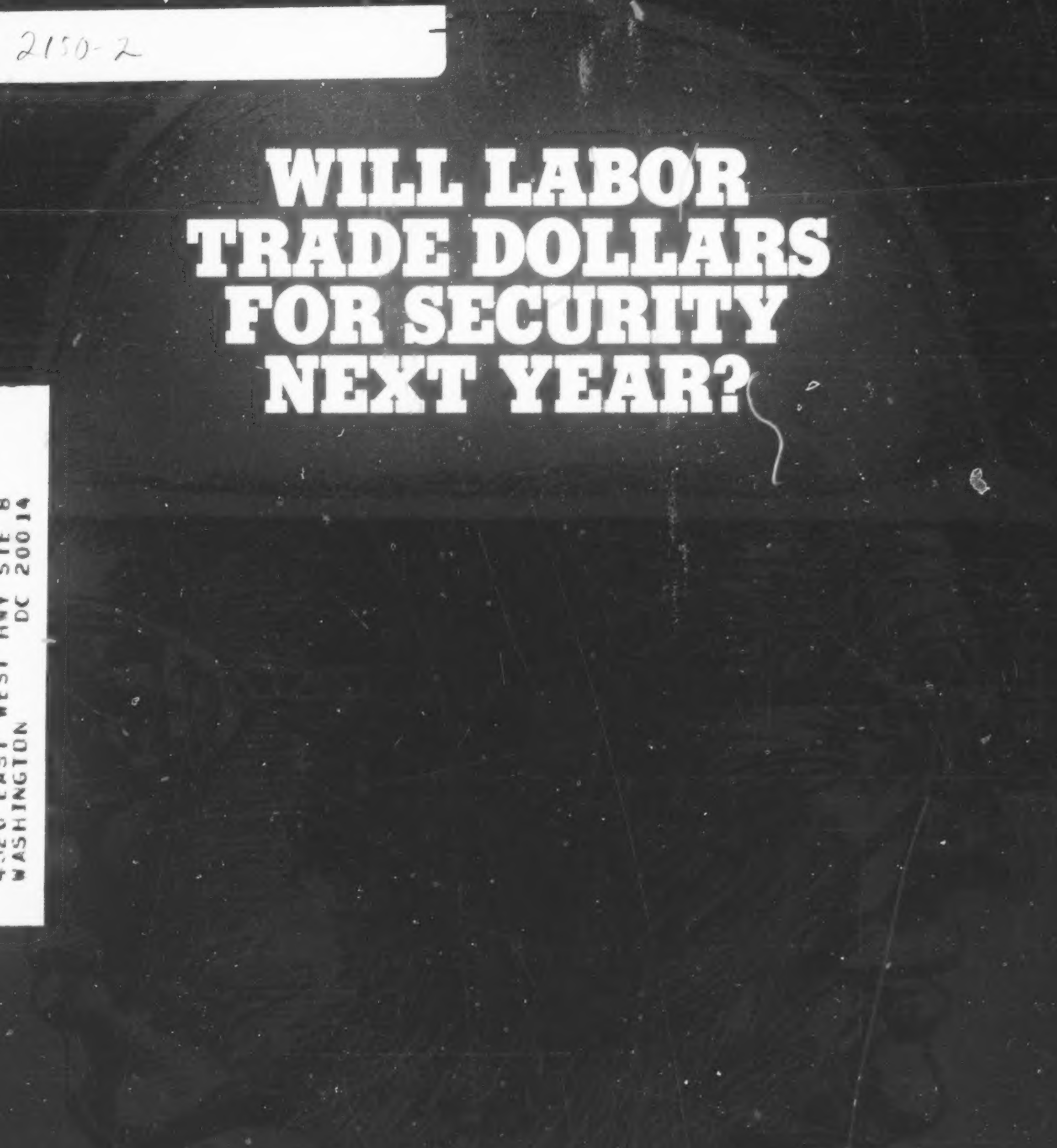

WILL LABOR TRADE DOLLARS FOR SECURITY NEXT YEAR?

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THE AMAZING GROWTH IN SYNTHETIC LUBRICANTS

RIDING THE WAVES OF GLOBAL CURRENCY FLUCTUATIONS

IRON AGE

VOL. 224 No. 30

OCTOBER 26, 1981

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IRON AGE (ISSN 0164-5137) is published 36 times a year on the first Monday, the third Wednesday and the last Monday of every month by CHILTON COMPANY, Chilton Way, Radnor, PA 19089. Chilton Co. is a division of American Broadcasting Companies, Inc., New York, N.Y. 2nd class postage paid at Philadelphia, PA 19104 and additional mailing offices. IRON AGE is sent on a controlled free basis to qualified managers in U.S. metalworking companies. Nonmetalworking companies, services, government, institutions, schools and colleges, $50 one year. Canada, $50 one year. Foreign, $60 one year. Single copies, $2.50. Cable Chilton, Philadelphia.
Send address changes to IRON AGE, P. O. Box 2040, Radnor, PA 19089

METALWORKING ORDER TRENDS

Orders set back by a slow economy and high interest rates

All the softness and uncertainty in the economy—and high interest rates—put the squeeze on durables new orders in August. Orders declined to $86.3 billion, down 3.5 pct from July.

The August dollar volume of orders was the lowest since the $84.0 billion level hit in November of last year.

There were four big weak spots in metalworking industry orders in August. Fabricated metal products were down from July by $1 billion to $9.8 billion. Primary metals and aircraft were each down by $.9 billion and electrical equipment orders were down by $.4 billion.

Only a good showing in orders flowing to producers of non-electrical machinery and equipment kept the August orders decline from being an outright retreat. Orders received by this industry group rose from $16.4 billion in July to $17.2 billion. (Still, these orders, in dollar volume, were pegged at just about where they were last spring.)

Most of the strength in the non-electrical machinery lines in August was in orders for engines and turbines and general industrial machinery.

In past months, it was often slow business in autos and trucks that weakened the overall metalworking new orders trend. But in August, the slippage in automotive orders (shipments in that industry) was nominal.

Even though there was little decline in August orders in the credit-sensitive auto industry, it was still sky-high interest rates that caused much of the weakness in metalworking new orders.

For example, steel orders slow when the auto industry announces future production cutbacks based on interest rate forecasts. And when housing starts in the credit-sensitive building industry fall, then orders for appliances soon follow.

And even in big-ticket industrial lines that are only loosely linked with consumer markets, interest rates play a big role. Industrial line capital goods in recent years have been heavily financed through funds raised through sale of corporate bonds. Soaring interest rates on bonds have led to plant spending cutbacks by even some of the largest corporations.

Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	3rd Qtr.	$323.0*	$316.7	$296.2
Manufacturing, Total	3rd Qtr.	128.7*	125.5	116.4
Manufacturing, Durable Goods	3rd Qtr.	63.1*	63.1	58.2
Mining Industry	3rd Qtr.	16.1*	16.8	13.9
Key Indicators, Durable Goods Manufacturing				
New Orders	Aug.	86.3	89.4	72.2
Shipments	Aug.	85.8	87.1	72.1
Inventories	Aug.	182.0	180.9	161.1
Unfilled Orders	Aug.	317.3	316.9	272.2
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Aug.	24.2	24.2	19.4
Capital Goods Producers, Defense Industries	Aug.	5.8	5.5	4.5
Primary Metals, Total	Aug.	11.6	12.5	11.4
Steel (SIC 331)	Aug.	6.1	6.4	5.6
Iron & Steel Castings (SIC 332)	Aug.	1.6	1.6	.9
Nonferrous Metals	Aug.	4.5	4.8	4.9
Nonelectrical Mach.-Equip. Industries, Total	Aug.	17.2	16.4	12.9
Engines & Turbines	Aug.	1.5	1.3	1.1
Farm Machinery & Equipment (Shipments)	Aug.	1.2	1.3	1.1
Construction, Mining & Materials Hdlg. Equip	Aug.	3.3	3.6	2.5
General Industrial Machinery	Aug.	1.6	1.5	1.0
Fluid Power Equipment** (Index-1972=100)	Aug.	271	316	192
Metalworking Machinery	Aug.	.8	.7	2.5
Machine Tools, Total (Millions $, unadjusted)	Aug.	214.0	194.8	224.5
Machine Tools, Metal-Cutting***	Aug.	166.8	136.9	165.1
Machine Tools, Metal-Forming***	Aug.	47.2	57.9	59.4
Electrical Mach. & Equip. Industries, Total	Aug.	11.7	12.1	10.8
Elec. Transmission Equip. & Industrial Apparatus	Aug.	2.0	2.0	1.7
Household Appliances	Aug.	1.0	1.1	1.2
Communication Equipment	Aug.	3.4	3.6	3.7
Transportation Equip. Industry, Total	Aug.	20.1	20.7	14.2
Motor Vehicles & Parts (Shipments)	Aug.	12.0	12.1	8.6
Aircraft, Missiles & Parts	Aug.	5.2	6.1	3.8
Shipbuilding & Military Tanks	Aug.	1.9	1.4	1.2
Fabricated Metal Products, Total	Aug.	9.8	10.8	8.5
Instruments, Total	Aug.	4.2	4.4	3.5

*Est.—Commerce Dept. **Source: National Fluid Power Assn. ***Source: NMTBA Source: U.S. Dept. of Commerce

CAN SYNTHETIC LUBES OVERCOME FRICTION IN THE MARKETPLACE?

Synthetic lubricants have gotten rave reviews in performance. But they still have a long way to go to achieve their projected goals.

By John J. Obrzut

"Though synthetic lubricants now account for hardly 2 pct of industry's consumption of lubricating oils and greases, their use will probably double every three or four years during the 1980s." So say two scientists, Dr. Russell Murphy and Dr. David Neiswender of the Mobil Research & Development Corp., Paulsboro, N.J.

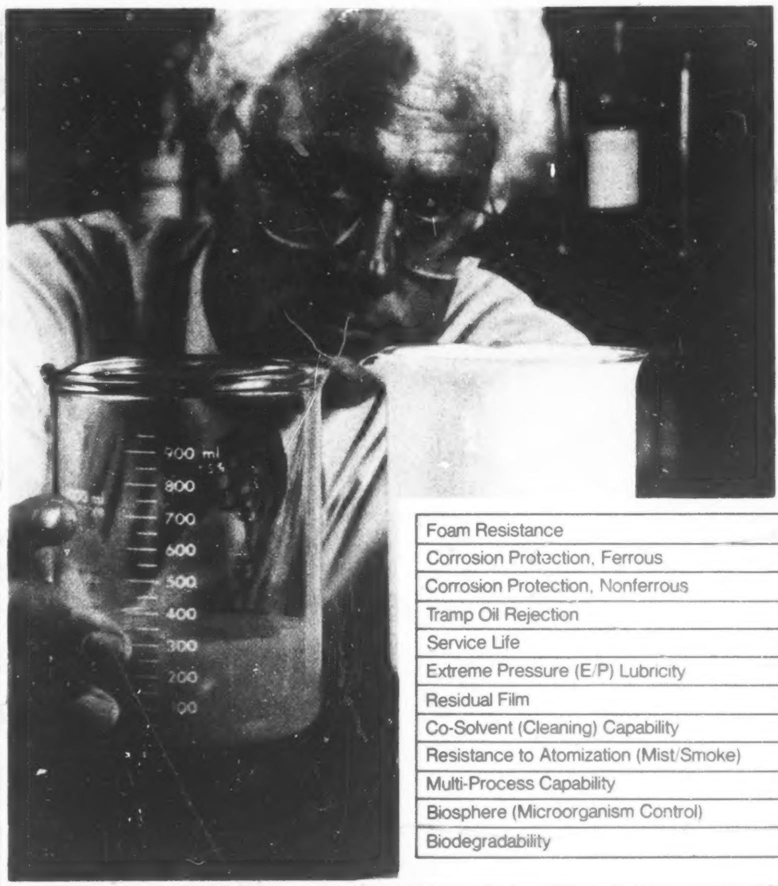
They cite two chief reasons for this projected growth in synthetic lubricants—they conserve energy; they reduce oil consumption.

A survey by the C. H. Kline & Co., Fairfield, N.J. agrees that synthetic lubricants account for about 2 pct by volume of the lubricant market, but contends that because of their higher price, they represent about 10 pct of the dollar value.

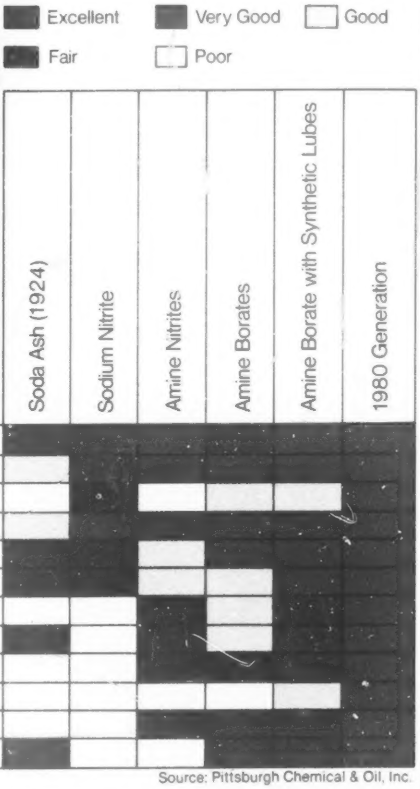
The Kline survey projects that synthetic lubricants will represent about 15 pct of the total lubricant market by dollar value by 1985.

Other forecasters predict that the 1980s will be a period of strong growth for the synthetic lubricants, doubling in volume over that of the past ten-year period. Even these estimates are described as being conservative. However, the base from which these estimates are made was quite low 10 years ago.

Whether the various surveys agree or disagree on the outlook regarding the extent to which synthetic lubri-



Some synthetic cutting fluids foam when highly agitated. Pillsbury fluid (left) produces little foam.

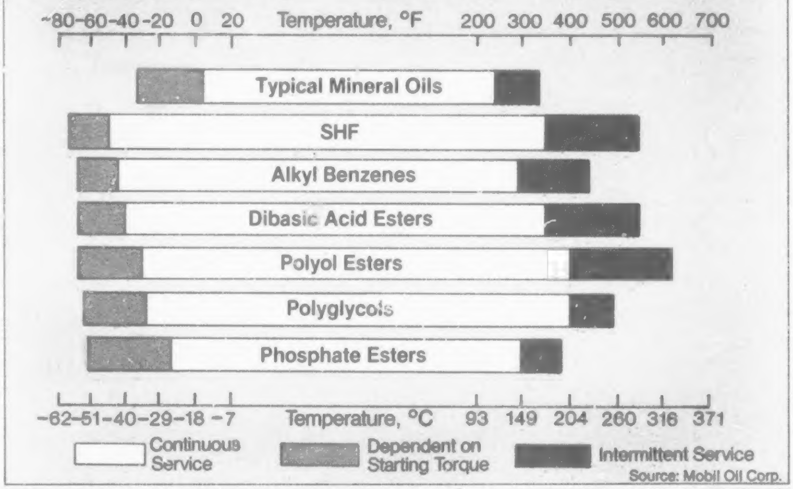


■ Excellent ■ Very Good □ Good
■ Fair □ Poor

	Soda Ash (1924)	Sodium Nitrite	Amine Nitrites	Amine Borates	Amine Borate with Synthetic Lubes	1980 Generation
Foam Resistance	■	■	■	■	■	■
Corrosion Protection, Ferrous	□	■	■	■	■	■
Corrosion Protection, Nonferrous	□	■	□	□	□	■
Tramp Oil Rejection	□	■	■	■	■	■
Service Life	■	■	□	■	■	■
Extreme Pressure (E/P) Lubricity	■	■	□	□	■	■
Residual Film	□	□	■	□	■	■
Co-Solvent (Cleaning) Capability	■	□	■	□	■	■
Resistance to Atomization (Mist/Smoke)	□	□	■	■	■	■
Multi-Process Capability	□	□	□	□	□	■
Biosphere (Microorganism Control)	□	□	■	■	■	■
Biodegradability	■	□	□	■	■	■

Source: Pittsburgh Chemical & Oil, Inc.

Comparative Temperature Limits of Hydrocarbon Synthetics vs Mineral Oil



Source: Mobil Oil Corp.

cants will grow through the 1980s, one thing is certain—they're expanding their niche in the market.

First, how does one define a synthetic lubricant? J. George Wills, chief technical editor of the Mobil Oil Corp. says that "synthetic-base fluids are man-made and tailored to have a controlled molecular structure with predictable lubricating properties."

Among the materials he classifies as synthetic-base fluids are the synthesized hydrocarbons, organic esters, polyglycols, phosphate esters, and other synthetic lubricating fluids. And he points out that among the synthetic lubricant bases now in use, the first four account for more than 90 pct of the volume. A number of high-cost materials make up the last category.

Synthetic lubricants do more than save energy and oil, Dr. Murphy contends. "The ability of synthetic lubricants to transmit power more efficiently through gears and other mechanisms gives equipment designers greater opportunities in one of their perennial goals. By specifying synthetic lubricants they can use smaller and more compact components and they can sometimes eliminate lubricant coolers. This will eventually reduce equipment costs."

Dr. Neiswender points out other advantages, one example being that synthetics are often used as answers to design problems—but after the fact. He notes that equipment intended for intermittent use but then used continuously or equipment with a poorly designed lubrication system, may break down quite often. Synthetic lubricants can often solve such problems and minimize breakdowns.

Synthetic lubricants are also being used where temperatures reach extremes. In fact, the first synthetics were used for just such applications for jet aircraft. Development work continues on synthetic lubricants that will give jet engines higher output and make them more fuel-efficient at even higher temperatures and pressures.

How can the metalworking and other industries benefit from synthetic lubricants? A study by the American Society of Mechanical Engineers (ASME) indicates that industry's use of synthetic lubricants can save as much as 11 pct in energy consumption by simply reducing friction in the machinery it operates.

It's an immediate and economical way to reduce energy losses in machines in three different ways: Synthetic lubricants maintain their viscosity better than mineral oils over wide temperature ranges, enabling better efficiency at lower temperatures; they're more easily formulated to give them polar films with a strong affinity for metals and thus better protection; and thirdly, their molecular structure is such that their traction coefficient (similar to the coefficient of friction for solids) may be made lower than that in mineral oils.

Dr. Murphy explains that the film of lubricant that separates two machine parts must be sheared to allow them to move, and as such, the greater the coefficient of traction, the more energy it takes to shear the film. High coefficients of traction account for much of the inefficiency in power transmission.

Synthetic lubricants can be formulated with built-in low coefficients. The energy savings in many applications can be significant.

For example, in a test of a mineral-base gear oil and a synthetic gear oil, both having similar operating characteristics, the synthetic gear oil gave a worm gear 7.3 pct higher efficiency in power transmission.

On the other hand, because synthetic lubricants can be formulated more readily to meet specific requirements, they hold promise as traction-drive fluids where the higher coefficient of traction would be desirable.

The energy savings possible through the use of synthetic lubricants are real, say the scientists. They point out that in 10 tests with synthetic gear oil, three of which were

Where Synthetic Lubricants Found Markets

Field of Service	Synthetic Fluids Used
Industrial	
Circulating Oils	Polyglycol, SHF, Organic Ester
Gear Lubricants	Polyglycol, SHF
Hydraulic Fluid (Fire Resistant)	Phosphate Ester, Polyglycol
Compressor Oils	Polyglycol, Organic Ester, SHF
Gas Turbine Oils	SHF, Organic Ester
Greases	SHF
Automotive	
Passenger Car Engine Oil	SHF, Organic Ester
Commercial Engine Oil	SHF, Organic Ester
Gear Lubricant	SHF
Brake Fluids	Polyglycols
Aviation	
Gas Turbines	Organic Ester
Hydraulic Fluids	Phosphate Ester, Silicones, SHF
Greases	Silicones, Organic Ester, SHF

Source: Mobil Oil Corp.

The Long and Short of Synthetic Lubricant Properties

Synthetic	Advantages vs. Mineral Oil	Limiting Properties
SHF	High Temperature Stability	Solvency/Detergency*
	Long Life	Seal Compatibility*
	Low Temperature Fluidity	
	High Viscosity Index	
	Improved Wear Protection	
	Low Volatility, Oil Economy	
	Compatibility with Mineral Oils and Paints	
	No Wax	
Organic Esters	High Temperature Stability	Seal Compatibility*
	Long Life	Mineral Oil Compatibility*
	Low Temperature Fluidity	Antirust*
		Antiwear and Extreme Pressure*
	Solvency/Detergency	Hydrolytic Stability
		Paint Compatibility
Phosphate Esters	Fire Resistant	Seal Compatibility
	Lubricating Ability	Low Viscosity Index
		Paint Compatibility
		Metal Corrosion*
		Hydrolytic Stability
Polyglycols	Water Versatility	Mineral Oil Compatibility
	High Viscosity Index	Paint Compatibility
	Low Temperature Fluidity	Oxidation Stability*
	Antirust	
	No Wax	

*Limiting properties of synthetic base fluids which can be overcome by formulation chemistry.
Source: Mobil Oil Corp.

done by Mobil, improvement in power transmission efficiency ranged from 2 pct to 8.8 pct. High oil temperature, an indication of wasted energy, was about 20°F cooler with the synthetic lubricant.

Mobil's Delvac 1, an engine oil made from synthesized hydrocarbons in the polyolefin family and esters, plus additives, is finding greater use in truck fleets, off-the-highway equipment and industrial trucks.

In tests with over-the-road matched vehicles, trucking associations, along with the Department of Transportation (DOT), showed that fuel savings were 3 to 4 pct by using the synthetic engine oil, along with a Mobil synthetic transmission and rear axle oil.

With medium- and heavy-duty industrial equipment, synthetic lubricants have given designers a degree of freedom they haven't had before. They can now increase machine power and speed output within limits without increasing machine size or weight, often with gears and shafts of the same sizes.

One gear maker, for instance, was able to increase the rating of a gear reducer from 18 to 19½ hp by simply switching from a mineral oil lubricant to a synthetic lubricant. Another gear maker was able to increase input horsepower to a worm gear by 15 pct.

Longer lubricant life is another plus for the synthetics. In some cases, in fact, it's a major advantage. It can cut costs two ways, first on lubricant cost and, secondly, on the cost of changing it. And with today's complex machines, it's more of a problem because gears and bearings are not always readily accessible.

Anyone with a sludge problem? Again, synthetic lubricants may be the answer. They resist oxidation very well and don't contain the compounds that produce sludge in mineral oils. Although their cost per gallon is much higher, their longer life may give them an economical trade-off.

Commonwealth Edison changed the oil in its nuclear plant coolant pumps twice a year—each time at a cost of $500,000 in lost power. It now uses a synthetic gear oil that lasts a full year between shutdowns.

But gear boxes and bearings are not the only applications for synthetics. They're used as cutting fluids for machining a great variety of materials.

"Even tough-to-cut metals, such as SAE 308 aluminum, can be machined successfully with synthetic cutting fluids," says Robert K. Rauth, president, Pillsbury Chemical & Oil, Inc., Detroit. "Synthetics have advantages over oils in a number of areas, an important one being tool life. They can increase tool life greatly because they have excellent extreme-pressure lubricity."

Also, synthetics reject tramp oil. Tramp oil in an oil coolant system reduces its effectiveness and results in premature dumping. Not so with synthetic cutting fluid. "Synthetics are true chemical solutions," Mr. Rauth notes, "and totally reject oils. Tramp

(Cont. on p. 57)

How Synthetic Coolants Compare with Soluble Cutting Fluids on Costs

10,000 gal Transfer Machine System

Item	Average of Four Synthetic Coolants	Average of Low and Medium-Priced Soluble Cutting Fluids
Purchase price per gallon	$4.30	$1.71
Recommended dilution	1:26 (3.8%)	1:20 (5%)
Cost/mixed gallon	$0.162	$0.081
Cost to fill system	1,620	$810
Expected fluid life	2 years	6 months
Replenishment ratio	1:83	1:25
Replenishment, cost/day	$33.10	$33.00
Waste treatment, gallons/year	5000	20,000
Annual Costs		
Fill system	$810	$1,620
Make up (replenishment)	8,275	8,250
Recharge cleaner and labor	525	2,100
Waste treatment	250	1,000
Total Annual Cost	**$9,860**	**$12,970**

Source: Pillsbury Chemical & Oil, Inc.

(Cont. from p. 54)

oils can be skimmed from the surface, reconditioned and re-used."

Mr. Rauth also cites the longevity in the life of a synthetic cutting fluid—four times longer than oil. Thus, refill costs are lower; make-up costs are lower; cleaning costs are lower; and waste treatment costs are lower—making the more expensive synthetic fluids less expensive to use in the long run. "One central coolant system using a synthetic hasn't been dumped in three years," says Mr. Rauth.

A large bakery that had problems with gear-drives and transmissions as well as with its chain-and-sprocket drives switched from petroleum-base lubricants to synthetic diester-base lubricants, made by the Keystone Division of Pennwalt Corp., at costs running three to four times higher than it had been paying per gallon for the petroleum lubricants.

In spite of the much higher unit costs, the bakery received a life span from the synthetics that was ten times that of the conventional lubricants—without nearly the number of problems, considerable saving in downtime and less chance of error. In addition, it saved sustantially on energy as a bonus.

Synthetic fluids often serve where oil-base products give up. Such was the case at Kelsey-Hayes' Detroit plant which went from hot to cold cleaning of machined parts. The oil-based additives separated from the washer solution and plugged up the system, according to Kurt Vollers, the plant's general manager.

A search led to the selection of a water-base synthetic in Pillsbury's 5000 series, one that was specially formulated for cold cleaning. "It supplied a detergent action that continuously cleaned the washer system, eliminating the plugging. It left the parts clean and rust-free," says Mr. Villars. With these and other advantages, he estimated that last year's savings at about $250,000.

The endorsements for the synthetic lubricants seem to be coming from the producers and their satisfied users. But some potential users don't seem to be ready to try them.

Some just can't justify the difference in costs under any circumstances. Still others may be waiting for another oil crunch.

"At that time (1973-74)," says G. J. Colucci, service engineer, Fluid Power Products Dept., E. F. Houghton & Co., Valley Forge, Pa., "85 pct or more of the 300 million gallons of hydraulic fluids consumed were oil-base.

"Since then, rapid strides have been made in developing synthetic water-soluble-additive concentrates which dilute with water to make fluids containing 95 pct water and 5 pct additives.

"Some are single-purpose fluids for hydraulic systems only. Others are dual-purpose fluids used undiluted or diluted in the hydraulic system of a machine tool, or diluted as a cutting or grinding coolant."

What these synthetic concentrates have done was simply to save users a substantial amount on hydraulic oil consumption. In concentrated form, these fluids sell for several dollars per gallon.

But when they're diluted to a ration of 19:1 with water, their cost drops to 25¢ or 35¢ a gallon, plus the labor cost for mixing. It's still a very sharp drop from the per gallon cost for hydraulic oil.

Although the cost differential favors the high water-base fluid, direct conversion of a system from oil to the synthetic high-water-base fluid is seldom possible. Some modification of the system is usually necessary to make it compatible with these fluids. Also, dilution of the concentrate requires special handling before it's used.

Aside from cost, another major advantage of these fluids is that they're biodegradable, and as such, any leakage can be handled on the spot or usually through a municipal waste water treatment facility. This treatment differs from that for a soluble oil-type hydraulic fluid in that the oil component is not biodegradable, says Mr. Colucci, and must be separated from the fluid so that the water can be dumped into a sewage system.

Tests performed by Exxon showed that its Synesstic 32 synthetic industrial lubricant, formulated from high-quality diester base stocks, can reduce energy significantly. By using a conventional industrial-type contact bearing, lubricated with the Synesstic 32 lubricant, it consumed 13.9 pct less power than a bearing using a petroleum-base oil.

In full scale compressor tests on reciprocating and centrifugal compressors in the field, net savings per year for fuel, lubricants, electricity and maintenance amounted to $100,000 on the reciprocating compressor and $2000 per year on the centrifugal compressor. □

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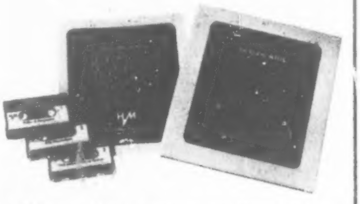
DEALING WITH PCBs

Cassette Tape Briefing helps evaluate your PCB liability



PCBs are virtually everywhere. They've been used in inks, dyes, paints—in hundreds of products sold under many brand names. The biggest use, however, was as a dielectric fluid in electrical transformers and other distribution equipment.

There are probably a lot more PCBs around your operation than you realize.

Since PCBs were labeled potentially hazardous in 1979 the issue has often become an emotional one. There has been confusion over the best way to deal with PCBs and the legislation concerning the correct labeling, record keeping, safety and other factors that could result in costly fines and/or negative publicity.

This cassette tape program—Dealing with PCBs—will help you and your personnel get on track quickly and deal with this complex issue.

The subject matter is divided into six quick reference tapes. Tape 1—PCBs—A Perspective; Tape 2—PCB Risk Analysis; Tape 3—Regulations; Tape 4—National Electrical Code on PCBs; Tape 5—The Health & Safety Aspects; Tape 6—PCB Decision Making Options. Printed Capsule summary and index included.

Tapes can be played over and over for training or convenient in-plant or home study.

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EFFECTIVE OCTOBER 5, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	250	251	244	221
Buffalo	58	59	56	46
Pittsburgh	320	358	365	343
Youngstown	127	128	130	80
Cleveland	160	169	158	131
Detroit	152	147	156	140
Chicago	506	524	568	466
Cincinnati	96	92	102	78
St. Louis	86	88	68	48
Southern	240	245	246	210
Western	134	143	147	133
U.S. Production	2,129	2,204	2,240	1,896

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/21/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.

**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective October 5, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,129	2,204	96,122	81,795
Capability Utilization Rate	72.0	74.5	81.8	70.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	25.195	25.195	22.019
Pig Iron** (Net ton=2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 82.17	$ 88.17	$ 91.17	$ 96.17
No. 2 bundles	$ 57.83	$ 59.17	$ 62.50	$ 70.50
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 96.50	$101.50	$101.50	$104.50
No. 1 steel, Philadelphia	70.50	78.50	78.50	91.50
No. 1 steel, Chicago	79.50	84.50	93.50	92.50
No. 1 bundles, Detroit	83.50	83.50	93.50	93.50
Low Phos., Youngstown	95.50	95.50	103.50	100.50
No. 1 mach'y cast., Pgh	94.50	94.50	94.50	106.50
No. 1 mach'y cast., Phila	117.50	117.50	117.50	121.50
No. 1 mach'y cast., Chi	122.50	124.50	127.50	120.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective October 5, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	80.00-81.00	80.55-84.00	10/ 2/81
Lead	38.00-44.00	40.00-44.00	10/ 1/81
Magnesium ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	45.00-49.25	49.25	10/ 1/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg	$17.26
Gold per troy oz.	$441.25
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$425-$435
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$8.25-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.46
Vanadium	$8.42
Zirconium sponge	$12.00-$17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in PENANG in Malaysian dollars per kilo.)

Sept. 28—693.03
Sept. 29—690.10
Sept. 30—691.08
Oct. 1—693.82
Oct. 2—690.58

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70
No. 2 copper wire	62
Light copper	53

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	66
No. 2 copper wire	58
Light copper	49
No. 1 composition	66
No. 1 comp. turnings	64
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	29
Radiators	50

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	17	—18
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	60	—61
No. 2 copper wire	50	—51
Light copper	47	—48
Radiators	41	—42
No. 1 composition	54	—55
No. 1 composition turn'gs	53	—54
Cocks and faucets	38	—39
Clean heavy yellow brass	33	—34
Brass pipe	38	—39
New soft brass clippings	48	—49
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	17	—19
Whole batteries	7	—8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	125	—130
Nickel rod ends	125	—130
Nickel sheets, clips	125	—130
Nickel turnings	75	—80
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE OCTOBER 5, 1981

MATERIALS NEWSFRONT

(Effective October 5,1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	86.00 to	87.00
No. 1 dealer bundles	114.00 to	115.00
No. 1 factory bundles (auto)	114.00 to	115.00
No. 2 bundles	64.00 to	65.00
No. 1 busheling	111.00 to	112.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	115.00 to	116.00
Heavy turnings	86.00 to	87.00
No. 1 RR hvy. melting	103.00 to	104.00
Rails, 2 ft. and under	118.00 to	119.00
Scrap rails, random lgth.	101.00 to	102.00
RR specialties	115.00 to	116.00
No. 1 machinery cast	94.00 to	95.00
Cupola cast	87.00 to	88.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	600.00 to	610.00
18-8 turnings	500.00 to	510.00

Chicago

No. 1 hvy. melting	$ 79.00 to	$ 80.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	91.00 to	92.00
No. 1 factory bundles (auto)	98.00 to	99.00
No. 2 dealer bundles	60.00 to	61.00
Unburned bundles	53.00 to	54.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	84.00 to	85.00
Machine shop turn.	40.00 to	41.00
Mixed bor. and turn.	41.00 to	42.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	56.00 to	57.00
Low phos. forge crop	107.00 to	108.00
Low. phos. punchings plate ¼ in. and heavier	117.00 to	118.00
Low phos. 2 ft. and under	110.00 to	111.00
No.1 RR hvy. melting	83.00 to	84.00
Scrap rails, random lgth.	79.00 to	80.00
Reroller rails	109.00 to	110.00
Rails, 2 ft. and under	114.00 to	115.00
RR couplers and knuckles	106.00 to	107.00
RR car axles	161.00 to	162.00
No. 1 machinery cast	122.00 to	123.00
Cupola cast	97.00 to	98.00
Stove plate	95.00 to	96.00
Steel car wheels	96.00 to	97.00
Stainless		
18-8 bundles and solids	580.00 to	590.00
18-8 turnings	470.00 to	480.00
430 bundles and solids	120.00 to	125.00
430 turnings	65.00 to	70.00

Philadelphia

No. 1 hvy. melting	$ 69.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	65.00
No. 1 dealer bundles	102.00 to	105.00
No. 2 dealer bundles	47.00 to	50.00
No. 1 busheling	97.00 to	100.00
Shredder scrap	87.00 to	90.00
Machine shop turn.	34.00 to	37.00
Mixed bor. and turn.	34.00 to	37.00
Shoveling turnings	49.00 to	52.00
Clean cast chemical borings	64.00 to	67.00
Low phos. 5 ft. and under	87.00 to	90.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	108.00 to	111.00
RR specialties	97.00 to	100.00
Rails, 2 ft. and under	117.00 to	120.00
Cupola cast	72.00 to	75.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to	$ 69.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	38.00 to	39.00
No. 1 busheling	82.00 to	83.00
Drop forge flashings	71.00 to	72.00
Machine shop turn.	32.00 to	33.00
Mixed borings and turn.	28.00 to	29.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	38.00 to	39.00
Heavy breakable cast	56.00 to	57.00
Mixed cupola cast	69.00 to	70.00
Automobile cast	92.00 to	93.00
Stainless		
18-8 bundles and solids	510.00 to	520.00
18-8 turnings	380.00 to	390.00
430 bundles and solids	120.00 to	130.00

Youngstown

No. 1 hvy. melting	$ 92.00 to	$ 93.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	102.00 to	103.00
No. 2 dealer bundles	52.00 to	53.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	27.00 to	28.00
Low phos. plate	95.00 to	96.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	80.00 to	81.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	56.00 to	57.00
No. 1 dealer bundles	101.00 to	102.00
No. 1 factory bundles	103.00 to	104.00
No. 2 bundles	47.00 to	48.00
No. 1 busheling	92.00 to	93.00
Machine shop turn.	20.00 to	21.00
Mixed bor. and turn.	20.00 to	21.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	22.00 to	23.00
Cut structural & plates, 2 ft. and under	117.00 to	118.00
Low phos. punchings plate	117.00 to	118.00
Drop forge flashings	60.00 to	61.00
Foundry steel, 2 ft. & under	93.00 to	94.00
No. 1 RR hvy. melting	100.00 to	101.00
Rails, 2 ft. and under	121.00 to	122.00
Rails, 18 in. and under	122.00 to	123.00
Steel axle turnings	81.00 to	82.00
Railroad cast	130.00 to	131.00
No. 1 machinery cast	130.00 to	131.00
Cupola cast	120.00 to	121.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	525.00 to	535.00
18-8 turnings	375.00 to	400.00
430 bundles	120.00 to	130.00

Buffalo

No.1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	43.00 to	44.00
No. 1 busheling	62.00 to	63.00
No. 1 dealer bundles	60.00 to	61.00
No. 2 dealer bundles	32.00 to	33.00
Machine shop turn.	5.00 to	6.00
Mixed bor. and turn.	14.00 to	15.00
Shoveling turnings	16.00 to	17.00
Cast iron borings	14.00 to	15.00
Low phos. plate	83.00 to	84.00
Structural and plate, 2 ft. and under	91.00 to	92.00
Rails, 2 ft. and under	69.00 to	70.00
Scrap rails, random lgth.	49.00 to	50.00
No. 1 machinery cast	89.00 to	90.00
No. 1 cupola cast	57.00 to	58.00

St. Louis

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	70.00 to	71.00
Foundry steel, 2 ft.	70.00 to	71.00
No. 1 dealer bundles	78.00 to	79.00
No. 2 bundles	67.00 to	68.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	78.00 to	79.00
Rails, random length	95.00 to	96.00
Rails, 18 in. and under	115.00 to	116.00
RR specialties	98.00 to	99.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	53.00 to	54.00
Stove plate	89.00 to	90.00
Cast iron car wheels	59.00 to	60.00
Rerolling rails	117.00 to	118.00
Unstripped motor blocks	65.00 to	66.00

Birmingham

No. 1 heavy melting	$ 86.00 to	$ 87.00
No. 2 heavy melting	81.00 to	[illegible]
No. 1 dealer bundles	87.00 to	88.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	87.00 to	88.00
Shredder scrap	96.00 to	97.00
Machine shop turn.	33.00 to	34.00
Shoveling turnings	41.00 to	42.00
Cast iron borings	39.00 to	40.00
Electric furnace bundles	87.00 to	88.00
Elec. furnace, 3 ft. & under	82.00 to	83.00
Structural and plate, 2 ft.	104.00 to	105.00
Structural and plate, 4 ft.	96.00 to	97.00
No. 1 RR hvy. melting	87.00 to	88.00
Scrap rails, random lgth.	87.00 to	88.00
Rails, 18 in. and under	109.00 to	110.00
Angles and splice bars	96.00 to	97.00
No. 1 cupola cast	94.00 to	95.00
Unstripped motor blocks	71.00 to	72.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to	$ 69.00
No. 2 hvy. melting	64.00 to	65.00
No. 1 dealer bundles.	84.00 to	85.00
No. 2 bundles	37.00 to	38.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	15.00 to	16.00
Cast iron borings	20.00 to	21.00
Low phos. 18 in. and under	98.00 to	99.00
Rails, random length	75.00 to	76.00
Rails, 2 ft. and under	105.00 to	106.00
No. 1 cupola cast	67.00 to	68.00
Heavy breakable cast	27.00 to	28.00
Drop broken cast	90.00 to	91.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	525.00 to	535.00
18-8 turnings	425.00 to	435.00
430 prepared solids	110.00 to	120.00
410 solids	100.00 to	110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to	$ 60.00
No. 2 hvy. melting	50.00 to	52.00
No. 1 dealer bundles	70.00 to	72.00
No. 2 bundles	31.00 to	33.00
No. 1 busheling	70.00 to	72.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	6.00 to	8.00
Shoveling turnings	15.00 to	17.00
No. 1 machinery cast	130.00 to	135.00
Mixed cupola cast	52.00 to	54.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 48.00 to	$ 50.00
No. 2 hvy. melting	40.00 to	42.00
No. 1 dealer bundles	35.00 to	37.00
No. 2 dealer bundles	20.00 to	22.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 46.00 to	$ 48.00
No. 2 hvy. melting	35.00 to	37.00
No. 1 dealer bundles	33.00 to	35.00
No. 2 dealer bundles	16.00 to	18.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace, 1 ft. and under (foundry)	110.00 to	112.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 78.00 to	$ 80.00
No. 2 hvy. melting	67.00 to	69.00
No. 2 bundles	57.00 to	59.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 92.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	68.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	92.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	75.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	50.00 to	52.00
Machine shop turn.	14.00 to	16.00
Crushed turnings	37.00 to	39.00
Shredder scrap	90.00 to	92.00
Cut structural plate 2 ft. and under	109.00 to	110.00
Unstripped motor blocks	73.00 to	75.00
Cupola cast	91.00 to	93.00

EFFECTIVE OCTOBER 12, 1981

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	228	250	235	232
Buffalo	59	58	58	41
Pittsburgh	317	320	376	335
Youngstown	140	127	124	102
Cleveland	164	160	158	131
Detroit	148	152	156	137
Chicago	495	506	539	476
Cincinnati	105	96	93	82
St. Louis	87	86	83	66
Southern	216	240	245	216
Western	136	134	138	132
U.S. Production	2,095	2,129	2,205	1,950

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)	gross-ton 80.50*
Old range, non-bessemer	gross-ton $28.75
Mesabi, regular-unscreened	gross-ton $28.50
Mesabi, non-bessemer	gross-ton $32.25-32.53**

*80.50¢—Cleveland-Cliffs as of 1/16/81, Hanna as of 1/20/81, Oglebay Norton as of 1/21/81; Pickands Mather as of 1/27/81 and U. S. Steel as of 1/16/81.
**$32.25—Cleveland-Cliffs as of 4/27/81; $32.53 U. S. Steel as of 6/30/81.

Steel Production, Composite Prices

(Effective October 12, 1981)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1981	To Date 1980
Net tons, in thousands	2,095	2,129	98,217	83,843
Capability Utilization Rate	70.8	72.0	81.5	70.4

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 9/27/81)	25.195	25.195	25.195	22.019
Pig Iron** (Net ton = 2000 lbs.)	$203.00	$203.00	$203.00	$203.00
Scrap No. 1 hvy.*** (Gross ton = 2240 lbs.)	$ 82.17	$ 82.17	$ 91.17	$ 95.50
No. 2 bundles	$ 57.17	$ 57.83	$ 62.50	$ 70.50

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 94.50	$96.50	$101.50	$102.50
No. 1 steel, Philadelphia	70.50	70.50	78.50	91.50
No. 1 steel, Chicago	81.50	79.50	93.50	92.50
No. 1 bundles, Detroit	83.50	83.50	93.50	93.50
Low Phos., Youngstown	95.50	95.50	103.50	100.50
No. 1 mach'y cast., Pgh.	94.50	94.50	94.50	106.50
No. 1 mach'y cast., Phila.	117.50	117.50	117.50	121.50
No. 1 mach'y cast., Chi.	120.50	122.50	127.50	120.50

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* Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

** Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

*** Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective October 12, 1981)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00-80.00	76.00	6/ 1/81
Copper (C)	82.90-83.00	81.00-83.00	10/12/81
Lead	38.00-44.00	40.00-44.00	10/ 1/81
Magnesium Ingot	134.00	125.00	6/ 1/81
Nickel	345.00	320.00	3/15/80
Titanium Sponge	765.00	722.00	5/ 1/81
Zinc	45.00-49.25	49.25	10/ 1/81

ALUMINUM: 99.5% Ingot. COPPER (C) = cathode. LEAD: commun. grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: briquette, Port Nickel, La. ZINC: High Grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$175.00
Beryllium-copper, per lb. cont. Be.	$105.00
Beryllium 97% powder 200	$148.00
Bismuth, ton lots	$1.80-$2.05
Cadmium, under one ton	$1.65-$2.05
Calcium, ton lots, crown	$2.78
Chromium, 99.8%	$3.90-$4.25
Cobalt, 99%, 250 kg.	$17.26
Gold per troy oz.	$453.50
Indium, 99.9%, troy oz.	$6.75-$7.75
Iridium, dollars per troy oz.	$600
Magnesium sticks, 10,000 lb.	$1.74
Mercury, per 76-lb. f.o.b. N.Y.	$420-$430
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$6.85-$8.50
Nickel oxide sinter at U.S. points of entry	$3.35
Palladium, per troy oz.	$140
Platinum, per troy oz.	$475
Rhodium, per troy oz.	$600.00
Silver ingots, per troy oz.	$9.63
Vanadium	$8.42
Zirconium sponge	$12.00-$17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in PENANG in Malaysian dollars per kilo.)

Oct. 5—692.53
Oct. 6—691.75
Oct. 7—693.12
Oct. 8—Holiday
Oct. 9—694.09

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs, add 1¢ per lb)

	Solids	Turnings
Copper	82½	73¼
Yellow brass	72	66⅞
Red brass	76	70¼
Comm. bronze	78¼	71¼
Mang. bronze	71	69¼
Free cutting rod ends	61	61

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	70
No. 2 copper wire	62
Light copper	53

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	66
No. 2 copper wire	58
Light copper	49
No. 1 composition	66
No. 1 comp. turnings	64
Hvy. yellow brass solids	40
Hvy. yellow brass turnings	29
Radiators	50

Aluminum

New mixed clips	34	—35
Old sheet	31	—32
Old cast	31	—32
Clean dry borings	32	—33

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum		
Segregated clippings	36	—37
Mixed L.C. clips	28	—29
Old sheets and cast	22	—23
Boring and turnings	17	—18
Duraluminum clippings	38	—39
Copper and Brass		
No. 1 copper wire	60	—61
No. 2 Copper wire	50	—51
Light copper	47	—48
Radiators	41	—42
No. 1 composition	54	—55
No. 1 composition turn'gs	53	—54
Cocks and faucets	38	—39
Clean heavy yellow brass	33	—34
Brass pipe	38	—39
New soft brass clippings	48	—49
Yellow brass rod ends	41	—42
Lead		
Heavy soft lead	17	—19
Whole batteries	7	— 8
Type metal	18	—19
Electrotype	30	—31
Nickel		
Nickel solids	125	—130
Nickel rod ends	125	—130
Nickel sheets, clips	125	—130
Nickel turnings	75	— 80
Zinc		
New zinc clippings	19	—20
Old diecast zinc	13	—14

EFFECTIVE OCTOBER 12, 1981

MATERIALS NEWSFRONT

(Effective October 12,1981) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	110.00 to	111.00
No. 1 factory bundles (auto)	114.00 to	115.00
No. 2 bundles	62.00 to	63.00
No. 1 busheling	108.00 to	109.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos. punchings plate	115.00 to	116.00
Heavy turnings	82.00 to	83.00
No. 1 RR hvy. melting	103.00 to	104.00
Rails, 2 ft. and under	118.00 to	119.00
Scrap rails, random lgth.	101.00 to	102.00
RR specialties	115.00 to	116.00
No. 1 machinery cast	94.00 to	95.00
Cupola cast	87.00 to	88.00
Heavy breakable cast	39.00 to	40.00
Stainless		
18-8 bundles and solids	600.00 to	610.00
18-8 turnings	500.00 to	510.00

Chicago

No. 1 hvy. melting	$ 81.00 to	$ 82.00
No. 2 hvy. melting	72.00 to	73.00
No. 1 dealer bundles	91.00 to	92.00
No. 1 factory bundles (auto)	98.00 to	99.00
No. 2 dealer bundles	60.00 to	61.00
Unburned bundles	53.00 to	54.00
No. 1 busheling	89.00 to	90.00
Shredder scrap	84.00 to	85.00
Machine shop turn.	40.00 to	41.00
Mixed bor. and turn.	41.00 to	42.00
Shoveling turnings	44.00 to	45.00
Cast iron borings	57.00 to	58.00
Low phos. forge crop	107.00 to	108.00
Low. phos. punchings plate ¼ in. and heavier	117.00 to	118.00
Low phos. 2 ft. and under	110.00 to	111.00
No.1 RR hvy. melting	84.00 to	85.00
Scrap rails, random lgth.	83.00 to	84.00
Reroller rails	79.00 to	80.00
Rails, 2 ft. and under	114.00 to	115.00
RR couplers and knuckles	106.00 to	107.00
RR car axles	161.00 to	162.00
No. 1 machinery cast	120.00 to	121.00
Cupola cast	97.00 to	98.00
Stove plate	95.00 to	96.00
Steel car wheels	96.00 to	97.00
Stainless		
18-8 bundles and solids	570.00 to	580.00
18-8 turnings	460.00 to	470.00
430 bundles and solids	115.00 to	120.00
430 turnings	65.00 to	70.00

Philadelphia

No. 1 hvy. melting	$ 69.00 to	$ 72.00
No. 2 hvy. melting	62.00 to	65.00
No. 1 dealer bundles	102.00 to	105.00
No. 2 dealer bundles	47.00 to	50.00
No. 1 busheling	97 to	100.00
Shredder scrap	86.00 to	89.00
Machine shop turn.	34.00 to	37.00
Mixed bor. and turn.	34.00 to	37.00
Shoveling turnings	46.00 to	49.00
Clean cast chemical borings	64.00 to	67.00
Low phos. 5 ft. and under	84.00 to	87.00
Low phos. 2 ft. punchings	117.00 to	120.00
Electric furnace bundles	108.00 to	111.00
RR specialties	94.00 to	97.00
Rails, 2 ft. and under	117.00 to	120.00
Cupola cast	70.00 to	73.00
Heavy breakable cast	65.00 to	68.00
No. 1 machinery cast	116.00 to	119.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 68.00 to	$ 69.00
No. 2 hvy. melting	67.00 to	68.00
No. 1 dealer bundles	83.00 to	84.00
No. 2 bundles	38.00 to	39.00
No. 1 busheling	82.00 to	83.00
Drop forge flashings	68.00 to	69.00
Machine shop turn.	32.00 to	33.00
Mixed borings and turn.	27.00 to	28.00
Shoveling turnings	32.00 to	33.00
Cast iron borings	38.00 to	39.00
Heavy breakable cast	56.00 to	57.00
Mixed cupola cast	69.00 to	70.00
Automobile cast	92.00 to	93.00
Stainless		
18-8 bundles and solids	510.00 to	520.00
18-8 turnings	380.00 to	390.00
430 bundles and solids	120.00 to	130.00

Youngstown

No. 1 hvy. melting	$ 96.00 to	$ 97.00
No. 2 hvy. melting	57.00 to	58.00
No. 1 dealer bundles	112.00 to	113.00
No. 2 dealer bundles	63.00 to	64.00
Machine shop turnings	17.00 to	18.00
Shoveling turnings	27.00 to	28.00
Low phos. plate	95.00 to	96.00
Electric furnace bundles	96.00 to	97.00
Galvanized bundles	96.00 to	97.00

Cleveland

No. 1 hvy. melting	$ 86.00 to	$ 87.00
No. 2 hvy. melting	56.00 to	57.00
No. 1 dealer bundles	101.00 to	102.00
No. 1 factory bundles	103.00 to	104.00
No. 2 bundles	47.00 to	48.00
No. 1 busheling	92.00 to	93.00
Machine shop turn.	20.00 to	21.00
Mixed bor. and turn.	20.00 to	21.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	22.00 to	23.00
Cut structural & plates, 2 ft. and under.	117.00 to	118.00
Low phos. punchings plate	117.00 to	118.00
Drop forge flashings	60.00 to	61.00
Foundry steel, 2 ft. & under	93.00 to	94.00
No. 1 RR hvy. melting	100.00 tc	101.00
Rails, 2 ft. and under	121.00 to	122.00
Rails, 18 in. and under	122.00 to	123.00
Steel axle turnings	81.00 to	82.00
Railroad cast	130.00 to	131.00
No. 1 machinery cast	130.00 to	131.00
Cupola cast	120.00 to	121.00
Stove plate	90.00 to	91.00
Stainless		
18-8 bundles	525.00 to	535.00
18-8 turnings	375.00 to	400.00
430 bundles	120.00 to	130.00

Buffalo

No.1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	43.00 to	44.00
No. 1 busheling	62.00 to	63.00
No. 1 dealer bundles	60.00 to	61.00
No. 2 dealer bundles	32.00 to	33.00
Machine shop turn.	5.00 to	6.00
Mixed bor. and turn.	14.00 to	15.00
Shoveling turnings	16.00 to	17.00
Cast iron borings	14.00 to	15.00
Low phos. plate	83.00 to	84.00
Structural and plate, 2 ft. and under	91.00 to	92.00
Rails, 2 ft. and under	69.00 to	70.00
Scrap rails, random lgth.	49.00 to	50.00
No. 1 machinery cast	89.00 to	90.00
No. 1 cupola cast	57.00 to	58.00

St. Louis

No. 1 hvy. melting	$ 78.00 to	$ 79.00
No. 2 hvy. melting	70.00 to	71.00
Foundry steel, 2 ft.	70.00 to	71.00
No. 1 dealer bundles	78.00 to	79.00
No. 2 bundles	67.00 to	68.00
Machine shop turn.	22.00 to	23.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	35.00 to	36.00
No. 1 RR hvy. melting	78.00 to	79.00
Rails, random length	85.00 to	86.00
Rails, 18 in. and under	105.00 to	106.00
RR specialties	88.00 to	89.00
Cupola cast	82.00 to	83.00
Heavy breakable cast	48.00 to	49.00
Stove plate	82.00 to	83.00
Cast iron car wheels	49.00 to	50.00
Rerolling rails	111.00 to	112.00
Unstripped motor blocks	60.00 to	61.00

Birmingham

No. 1 heavy melting	$ 84.00 to	$ 85.00
No. 2 heavy melting	79.00 to	80.00
No. 1 dealer bundles	85.00 to	86.00
No. 2 bundles	65.00 to	66.00
No. 1 busheling	86.00 to	87.00
Shredder scrap	96.00 to	97.00
Machine shop turn.	30.00 to	31.00
Shoveling turnings	39.00 to	40.00
Cast iron borings	35.00 to	36.00
Electric furnace bundles	87.00 to	88.00
Elec. furnace, 3 ft. & under	79.00 to	80.00
Structural and plate, 2 ft.	104.00 to	105.00
Structural and plate, 4 ft.	96.00 to	97.00
No. 1 RR hvy. melting	87.00 to	88.00
Scrap rails, random lgth.	87.00 to	88.00
Rails, 18 in. and under	109.00 to	110.00
Angles and splice bars	96.00 to	97.00
No. 1 cupola cast	94.00 to	95.00
Unstripped motor blocks	67.00 to	68.00

Cincinnati

Brokers buying prices por gross ton on cars:

No. 1 hvy. melting	$ 68.00 to	$ 69.00
No. 2 hvy. melting	64.00 to	65.00
No. 1 dealer bundles	84.00 to	85.00
No. 2 bundles	37.00 to	38.00
Machine shop turn.	15.00 to	16.00
Shoveling turnings	15.00 to	16.00
Cast iron borings	20.00 to	21.00
Low phos. 18 in. and under	98.00 to	99.00
Rails, random length	75.00 to	76.00
Rails, 2 ft. and under	105.00 to	106.00
No. 1 cupola cast	67.00 to	68.00
Heavy breakable cast	27.00 to	28.00
Drop oroken cast	90.00 to	91.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	42.00 to	43.00
No. 2 dealer bundles	39.00 to	41.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	18.00 to	20.00
Shoveling turnings	21.00 to	22.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	94.00 to	95.00
Mixed yard cast	62.00 to	64.00
Heavy breakable cast	17.00 to	18.00
Stainless		
18-8 prepared solids	500.00 to	510.00
18-8 turnings	400.00 to	410.00
430 prepared solids	110.00 to	120.00
410 solids	100.00 to	110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 58.00 to	$ 60.00
No. 2 hvy. melting	48.00 to	50.00
No. 1 dealer bundles	70.00 to	72.00
No. 2 bundles	30.00 to	32.00
No. 1 busheling	70.00 to	72.00
Shredder scrap	72.00 to	74.00
Machine shop turn.	5.00 to	7.00
Shoveling turnings	14.00 to	16.00
No. 1 machinery cast	130.00 to	135.00
Mixed cupola cast	52.00 to	54.00
Heavy breakable cast	16.00 to	18.00

San Francisco

No. 1 hvy. melting	$ 48.00 to	$ 50.00
No. 2 hvy. melting	40.00 to	42.00
No. 1 dealer bundles	35.00 to	37.00
No. 2 dealer bundles	20.00 to	22.00
Machine shop turn.	10.00 to	12.00
Cast iron borings	10.00 to	12.00
No. 1 cupola cast	110.00 to	112.00

Los Angeles

No. 1 hvy. melting	$ 46.00 to	$ 48.00
No. 2 hvy. melting	35.00 to	37.00
No. 1 dealer bundles	33.00 to	35.00
No. 2 dealer bundles	16.00 to	18.00
Machine shop turn.	10.00 to	12.00
Shoveling turnings	15.00 to	17.00
Cast iron borings	10.00 to	12.00
Elec. furnace. 1 ft. and under (foundry)	110.00 to	112.00
No. 1 cupola cast	120.00 to	122.00

Seattle

No. 1 hvy. melting	$ 78.00 to	$ 80.00
No. 2 hvy. melting	67.00 to	69.00
No. 2 bundles	57.00 to	59.00
No. 1 cupola cast	110.00 to	112.00
Mixed yard cast	100.00 to	102.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No 1 heavy melting	$ 92.00
No. 2 heavy melting cut 2 ft. and under	87.00
No. 1 dealer bundles	95.00
No. 2 bundles	68.00
Mixed steel scrap	65.00
Bush. new fact. prep'd.	92.00
Bush. new fact. unprep'd.	80.00
Machine shop turn.	45.00
Short steel turn.	47.00
Mixed bor. and turn.	40.00
Cast scrap	75.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 90.00 to	$ 92.00
No. 2 hvy. melting	79.00 to	81.00
No. 2 bundles	50.00 to	52.00
Machine shop turn.	14.00 to	16.00
Crushed turnings	37.00 to	39.00
Shredder scrap	90.00 to	92.00
Cut structural plate 2 ft. and under	109.00 to	110.00
Unstripped motor blocks	73.00 to	75.00
Cupola cast	91.00 to	93.00